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AMERICAN JOURNAL OF EDUCATION.

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INTRODUCTION.

THE course intended to be pursued in conducting the present volume of the Journal, was briefly mentioned in the advertisement attached to Vol. III. But as that notice may not come into the hands of new subscribers, a concise statement of our arrangements for this year may not be unacceptable, as a cursory introduction to the articles which shall be presented in this and subsequent numbers.

Our work has hitherto been perhaps too strictly confined to topics of education ; yet the patronage extended to it, under these circumstances, has been such as to continue its existence. A more extensive field of usefulness, however, it is thought, as well as a wider circulation would be secured, by enlarging the scope of contributions, so as to embrace those things which form the *subjects* of education, and consequently become matters of general interest to a reading community.

The dissemination of useful knowledge, and the application of science to the practical pursuits of life, will accordingly be objects of attention in our future numbers. Arrangements to this effect have been made with individuals who take an active interest in the general diffusion of science and intellectual improvement. In connexion with these objects, a space will be regularly appropriated to articles designed to advance the in-

terests of the Lyceum,—an institution already well known, we presume, to most of our readers, as one very successfully adapted to the circumstances of society in this country. By a happy combination in its character, it embraces the benefits imparted by the mechanics' institutes, along with advantages appropriate to the agricultural life and its various occupations. A particular attention is also given by its members to the subject of popular education, with a view to the immediate improvement of schools, and the better qualification of teachers for their professional employments. The numerous branches of this popular institution require a common channel of intelligence, and, (if possible,) a peculiar source from which to derive materials and suggestions for reading, conversation, and other exercises suited to the mutual improvement of their members. The Journal of Education is designed, in its present form, to suit this purpose, by communicating information of the progress of the Lyceum, and furnishing short and familiar treatises on various subjects of general knowledge and practical science.

In accordance with its original design, the Journal will still embrace whatever may seem conducive to the diffusion of enlightened, extensive, and elevated views of the whole subject of education. Occasional notice will also be taken of the various branches of instruction already introduced in schools and other seminaries, as well as of those which the general dissemination of science at this day seems to authorize or to require.

With a view to the farther improvement of the work by original contributions on important subjects, it is proposed to enlarge the size of the numbers, so as to admit of their being issued, henceforward, *once in two months*; the interval elapsing hitherto between the dates of publication, having been found less favourable for such an arrangement.

ART. I.—*The Philosophy of Bacon, considered in Reference to its Influence upon the Human Mind.*

THE writings of many of the ancients which have come down to us, afford conclusive evidence, not merely that their natural powers of mind were of the first order, but that they had been disciplined with great care. It is not pretended that the poetry of Homer, or the eloquence of Demosthenes and Cicero, has been surpassed in excellence, by the productions of more recent times. In architecture and statuary, we have done little more than to imitate the models of ancient Greece and Rome. Indeed, the same remark might be extended to many other departments of the arts and of literature, which properly depend upon the decisions of taste and judgment. But in natural philosophy, the ancients were extremely deficient. The fact seems to be, that they had not discovered the true mode of advancing in it. Here, too, they permitted themselves to be influenced by mere matters of feeling and opinion. They formed theories in their own minds, and persuaded themselves that these were true in fact. It is plain that they were in no condition to learn, for they aspired to make, the laws of nature. In addition to this, their different opinions soon began to conflict with each other. Thus the evil of sectarian disputes among themselves, was super-added to those general errors which naturally resulted from their common ignorance of the true mode of philosophizing. When this state of things is borne in mind, their meagre attainments in this department of human learning are no longer surprising. Their mistake was made at the very outset ; and every new step served but to make their theories the more palpably absurd. This mistake consisted in supposing that the natural powers of the human mind were adequate to declare the laws of nature, without having first learned them by actual observations and experiments.

Here was the point where Bacon interfered, and earned a fame as lasting as the laws of science themselves. His object was not so much to give the world information, as to show the way to it. He attempted to point out and define the rich fields to be cultivated, rather than the fruits to be produced. Science is the knowledge of things as they exist. And he taught that it is the part of true philosophy, to found itself on facts and actual existences. To a disciple of Bacon, a theory is not a system which he has pledged himself to support ; but merely a classifi

cation of facts and observations, which he is ready to alter and amend, as new discoveries may require. He takes his facts from the operations of nature, whose disciple he avows himself to be. This is the inductive philosophy which has been so long working a revolution in the whole circle of the arts and sciences ; and at no period more successfully than at the present moment. Here is a foundation laid, which is broad enough for all to build upon ; for it is coextensive with the works of creation. It often seems as if truth had been sparingly and tardily disclosed. But all history proves that, slowly as it has risen, it has shone, in its dawning, upon many eyes that were unwilling to acknowledge it. The principles of Bacon did not escape the common fate of new discoveries, and were met by a most violent and bitter opposition. The powers of church and state conspired to effect their overthrow. And well might they unite for this purpose. For these principles contained the germ of a philosophy which was soon to elevate the human mind into a state of freedom and independence, which it had never before attained. And the powers of church and state, as then established and administered, anticipated the struggle they must soon endure, and trembled from a consciousness of their own radical unsoundness.

There were not wanting those, however, who were ready to pursue their inquiries after natural science, according to the inductive method which Bacon had pointed out. And it is not now necessary to recount the history of their unparalleled success. Much more has been effected than the most sanguine of Bacon's immediate followers ever ventured to anticipate. The precise things have not been discovered, which seemed to them probable ; but things quite as much in advance of the state of science which then existed, and things of incalculable value in their application to the various uses of life. These external effects of which we are now speaking, are visible alike to all. And it has now become as fashionable to eulogize the principles of Bacon, as it ever could have been to condemn them. He who has learned little else, has yet learned to bestow a passing tribute here. But it is much easier to be loud in their praise, than to be trained in their practice. We have already spoken of the mode of philosophizing, before the time of Bacon, and of the change which his system introduced. It is our design to apply these remarks particularly to the effect of the true mode of philosophizing upon the state of the human mind. In order to make this plain it may be necessary to examine the nature of the change which Bacon introduced. It is one of the infirmities of the human mind, not

to be aware of its own need of discipline. This is the case now, as much as it was before Bacon lived and wrote. It is natural to form theories without sufficient examination, and to support them against all truth and probability. Now it was the direct tendency of Bacon's philosophy to cure this evil. Thus it would not merely establish true principles of natural philosophy, but would disclose the true way for the mind to enter into these principles. It would be manifested not merely in the character of the results which would be attained, but in the mode by which they would be reached. Not merely in the truths believed, but in the nature of this belief, and in the tenure by which theories would be held. It is one thing to believe in the truth of certain theories which the application of the inductive system has established, and quite a different thing to arrive at those results by the inductive method. In the one case, the mind has adopted the opinions of others as true upon authority ; in the other, it has blossomed and brought forth fruit of its own.

The difficulty which the philosophers of Bacon's time felt in bringing themselves to practise upon his principles, is still experienced. The disposition to theorize is checked in its operations by a fear that its fallacies will be detected and exposed. But what was labour then, is labour now. The royal road to science is still undiscovered. And if we would enter into the principles of true philosophy in the true way, we must do it by a patient induction of our own. It is not meant that every man must himself perform all the experiments and make all the observations necessary to authorize the conclusion. These may be taken on the testimony of those who have heard and seen. But there is a process for the mind to go through in forming its conclusions, a step of which corresponds to and rests upon every one of these facts and observations. This is what each one must do for himself, if he would be a philosopher.

The principle we are speaking of is easily explained. We have said that a theory now rests upon certain facts and observations, and is received as an inference from them ; or rather as a general expression of the truth which they manifest. Hence it is evident that in order to understand what this theory signifies, and with what qualifications it is to be received, it must be viewed as a result from these facts. Thus every man who would understand it, must view the facts in his own mind, and form his own induction. Those who receive it in any other manner, are as much bound by a false attachment to theory, and as liable to sectarian zeal, as were the ancients. It is obvious, then,

that the true system of natural philosophy, has a most important bearing upon the state of the human mind. The general effects it has already produced are manifested in the spirit of independence and free inquiry which has marked its progress. But this is to be regarded as scarcely yet commenced. For, strange as it may seem, the principles of Bacon's philosophy are scarcely yet introduced into their proper sphere of operation. It was natural for those who found it so difficult to conform their own minds to their influence, to suppose them to be too sublime for childhood and youth. But the science of education is beginning to be better understood ; and it will soon be seen that Bacon has had no truer follower than Pestalozzi. Education is now beginning to be regarded as consisting not so much in the acquisition of knowledge, as in the formation of philosophical habits of mind. For the true philosophy of mind is as applicable to children as to men. The idea that in the season of youth, rules and problems are to be learned by rote, and the mind thus stored with knowledge for the uses of after life, is fast becoming obsolete. And instead of an irksome and worse than useless attempt to force the young mind to retain by an unnatural grasp, what it cannot comprehend, our schools will soon become the true nurseries of intellect—places where the infant mind instead of satiety and disgust, will acquire a thirst after knowledge, and learn the laws of its own development. And instead of being decked with artificial flowers, and loaded with unnatural fruit, it will be encouraged to strike its own roots into the earth, and spread its branches to the soft influences of heaven, and thus be made capable of the purposes of its own destiny.

To show the application of this view of the inductive method to primary schools, a single instance will suffice. We select the science of arithmetic. And we say that the inductive method is not merely the true mode of learning it, but the only mode. Disguise the matter as much as we please, there is yet an order in the process of acquiring it, which cannot be reversed. We may insist that the abstract principle, shall first be committed to memory under the name of a rule, and then add examples to be mechanically solved by its application. But the abstract rule was never framed, till long after the mind of him who framed it, had been familiar with the examples which it embraces. And he who would understand it, must go through a similar process. He must see the truth in his own mind, in single individual examples, before he can understand the abstract rule or proposition which is the expression of the general truth. The usual mode

of teaching this science is therefore essentially defective. It presents things truly ; but it presents the unintelligible side of them—unintelligible, because the principles by which it is to be understood have not first been explained. Perhaps we ought not to dismiss this part of the subject, without expressing our satisfaction that so far as the science of arithmetic is concerned, the evil is in a great measure provided for. And with this we also express our individual opinion, that the introductory arithmetics by Colburn and others, upon the plan of Pestalozzi, are now exerting a more powerful influence in philosophizing the human mind, than all the metaphysical books of the age.

Perhaps the remarks we have already made will be sufficient to explain the view we wish to convey. By the application of the inductive method, the natural world has been made to yield its treasures for the convenience and gratification of man. But he who stops here in his contemplation of the benefits to be derived from a true system of natural philosophy, takes but an outside view of the subject. Its principal use has not been displayed in developing the laws of the natural world, and in ministering to the external conveniences of natural life. It has had a higher use to perform in its reaction upon the mind itself. The new and increased strength and vigour and independence of mind, which are beginning to be manifested by all classes, are to be attributed to the impetus received from the principles of a sound natural philosophy. These have to do directly with the powers and operations, and the constant, daily habits of the mind. And their tendency to demonstrate the true laws of natural science is not more sure, than their wholesome influence upon the mind itself. Natural science is the world in which the mind loves to labour ; and the tendency and effect upon itself, are similar X to the effects which the body derives from free exercise in the open air.

But, as was said before, these benefits are not transferable from one mind to another. The health and strength of which we are speaking are such as can be acquired only by individual application. It is impossible, from the very nature of the case, that the same identical truth can be communicated from one person to another. The fruit can be united to no branch but that which produced it. The cement of its living union is something more than the mere power of adhesion, or art might supply its place. As has already been observed, therefore, it is merely the external benefit of true natural philosophy which is made common to all. A way is opened and facilities are afford-

ed for all to enter into its more important uses. But for this object much labour and personal investigation is necessary. And it is no uncommon thing, even at the present day, to see many who have enjoyed all the advantages of education which our country affords, who have yet made no advances in true philosophy. They may have become acquainted with the results, but they have not been disciplined by the process. But much is to be anticipated from the changes in this respect which our elementary schools are exhibiting. Not only more of the rising generation will become imbued with the true principles of philosophy, but they will have the advantages of an earlier commencement, with no injurious prejudices to overcome. We may predict with certainty that great advantages will result from these improvements ; but we cannot with accuracy define their character nor measure their importance.

ART. II.—*Observations on Infant Schools.*

INFANT schools are an institution of recent origin ; and, in this country, particularly, it is but a short time since they became objects of general attention. Few of our community have had opportunity of personally observing the operation of these schools ; and many have necessarily derived all their knowledge of them from occasional report. A brief account, therefore, of the character and design of schools of this description, may not be uninteresting as an introduction to more general statements relating to the same subject.

✓ An infant school may be best described, perhaps, as something which resembles, not so much a school, as a large nursery, and the object of which is to provide for its little inmates employment and amusement, not less than instruction. A number of young children, varying, in different instances, from fifty to one or even two hundred in amount, and embracing all diversities of age, from that of about six years down to that of eighteen months, are assembled to spend the day under the care of a teacher, furnished with the requisite aid of one or more female assistants.

The arrangements made for the benefit of these infant pupils, are designed, in the first place, with reference to *comfort and health*. A spacious, airy, and well lighted room, with several smaller apartments adjoining, as well as a suitable play ground, is accordingly provided in all cases where such advantages are accessible ; and the children receive every attention for convenience and health, for their noon meal, for intervals of play, of rest, and even of sleep, which could be devised by the most solicitous care of a mother. In many instances, also, the additional aids of simple taste and decoration have been employed ; and the mind of childhood, is delighted with specimens or representations drawn from the vast stores of grandeur and beauty, amid which it is the common privilege of man to be placed by creative Wisdom.

The *intellectual* instruction imparted at these schools, is restricted to a few simple but useful and interesting elements. It embraces the rudiments of arithmetic, a good degree of progress in reading and orthography, some information about animals, plants, and minerals, and the various substances composing articles of daily use in household affairs or the arts of life,—beside other things which it would consume too much time to enumerate.

But the peculiar feature in the infant school system, is, the excellence of its *moral* instruction, by which the pupils, instead of being made passive recipients of injunctions and silent listeners to truth, are allowed a free and varied intercourse with each other and with their teacher, and are made active and spontaneous agents in their own improvement. The moral lessons of the infant schools, if they ever can be detached from the other departments of instruction and exercise, may be briefly said to resemble, as nearly as possible, the tender, affectionate, and judicious management of a well regulated nursery. In its connexion, however, with the cheering and enlivening influence of numbers, its free scope for social amusement and recreation, and its frequent recourse to the elementary principles of interesting and useful knowledge, the infant school method has some points of superiority over perhaps the best forms of domestic nursery discipline,—for at least that part of the day, which it is desirable to have occupied with instruction.

The moral part of infant school education is eminently *rational* and *affectionate*. It is founded on familiar and common occurrences in the school room,—not conveyed in language always formal and seldom intelligible : it is addressed to the bet-

ter feelings of the heart, and is communicated in the accents of mild and kind affection : it is elicited *from the mind itself*,—not forced into it : the little community in the school room is, in fact, converted by skilful cultivation into a vigilant and most efficient society for the suppression of vice. This system throws away entirely the restraints of fear, and substitutes an intelligent and voluntary respect for those moral principles, which, to the unperverted mind of childhood, are intuitive.

To render this general description intelligible to persons who are unacquainted with the particular forms of discipline and instruction adopted in the infant schools, it may be sufficient to say, that the effects mentioned are produced by the personal influence of the teacher himself. He depends for his results chiefly on sympathy and imitation, those powerful principles of action in the young mind : he wishes the children to be uniformly cheerful,—to attain this end, he is so himself : he inculcates tenderness by the mildness of his own manner, and the gentleness of his own tones : he wishes his little pupils to be cleanly and neat in their personal appearance and habits,—he sets them a constant example, and preserves a corresponding effect in the school room and its furniture. He cultivates the sensibility to natural beauty and innocent pleasures by the interest he takes in the play ground and garden, and the care he bestows on them. For rules and penalties he substitutes encouragement and persuasion, and for tangible rewards he uses words and looks of approbation. If one of his little flock become wayward and refractory, instead of attempting to wrench the will from its course by violence, he mildly leads the offender to a group of his fellows who are pleased and busy with their lesson, and leaves him to the restoring influence of their society, and the susceptible spirit within his own little breast. Nature does its genial work ; the turbid mind soon becomes serene ; reason returns to her supremacy over the soul, bringing back with her the mood of gentleness and love. The softened transgressor returns with a new docility to the performance of his duty.

Those who are familiar with the history of education will recognize the methods adopted in infant schools as embodying the spirit of the system of Pestalozzi,—the greatest benefactor of our age, the truest observer of the human mind, and, (with one sacred exception,) perhaps its benignest friend : the man who was the first to maintain in relation to instruction, and to prove

by triumphant experiment, that there is within the human soul that, which to strengthen and expand and cherish and direct, is the sole business of education ; that every infant bosom is a mine of unexplored treasure, which cultivation only brings to light ; that every child possesses in miniature the attributes of the great Father of spirits ; and that in prosecuting moral education, the instructor has only to develop these traits of resemblance. The intellect, he thought, was to become a throne on which the better propensities might sit in perpetual dominion ; prostrating and exterminating every passion which is an enemy to the nobler nature, till the great fabric of character rises in the glory of complete and permanent proportion.

It can never be too deeply regretted that this illustrious philanthropist should have been so long misunderstood and misrepresented ; and that it was not till towards the close of his invaluable life that the generality, even of intelligent teachers, in this country or in England, recognized his high attributes of professional superiority, the sublimity of his benevolence, the profoundness of his philosophy, and the depth and extent of his experience. The glory of original and beneficent greatness, however, will dwell upon his name, as it descends to distant ages ; and history will revert to it with a grateful eye, when numbering the individuals whose minds have impelled the great tide of human improvement.

The children of the present generation are, in most countries of Europe, tracing the path of elementary knowledge under the guidance of his intellect, as communicated in his system of instruction ; and the village school boy in New-England finds with equal wonder and delight, that arithmetic, as taught on his principles, is a rational science, founded in his own mind, and assimilated to it.

The system of instruction adopted in the infant schools, is chiefly, then, a transcript of the method of Pestalozzi, applied to the earliest stages of education. It was first introduced into England about nine or ten years ago, by one of those active philanthropists whose names reflect a true splendour on that country. The first attempt to establish a school for infants, (if the information received at this distance is correct,) was made in the metropolis under the domestic roof of that individual ; and was thence extended as benevolent persons of influence became acquainted with its character and design, and teachers were prepared, by observing the original model.

With the modesty peculiar to simple motives and pure benevolence, the man to whose efforts society is indebted for the establishment of infant schools, has been so little anxious to assert his claim to public gratitude, that in bringing forward on this occasion the name of WILSON, as that of the founder of infant schools, it must be done as a thing which is gathered by inference from current information, rather than received on any particular authority. Nor is it important in a subject identified as this is with the interests of society, and receiving a fresh impulse from every mind which is applied to it, that we be exact in attempting to assign the merits or the names of individuals. Be he who he may, whose energies were first put forth to devise and to propel this engine of improvement, he carries within his own breast a consciousness for which dominion would be a poor exchange. If he is among those whose daily pursuits merge them in the mass of population congregated in London—‘that mighty heart,’ which has sent forth some of the noblest impulses of humanity—he enjoys daily the sublime satisfaction of contemplating the fruits of his labours, in the hundreds of fellow beings whom his humanity has been a chief instrument in wresting from the early dominion of ignorance and vice, and raising to the eminence, the purity, and the conscious freedom of intelligence and religious principle. If there is on earth such a thing as the reward of active virtue, it is realized in the soul of that man, as he passes the infant groups repairing to school, whose minds he has rescued from neglect and ruin—whose clean apparel and healthful air of innocent happiness, tell what it is to be redeemed from the influences of domestic misery, and an education in the streets. If he occasionally visits the other cities of his native country, and witnesses the extension and rapid increase of the infant schools, and sees them becoming the elementary part of that system of general education which is now diffusing itself in every part of Britain, and shedding the light of intelligence and of piety over all classes of the people—he perceives that the humble endeavours of an individual, begun and carried on with the sole aid of a good purpose, may do more for human happiness than was ever effected by the enactments of legislators.

Infant schools, soon after their establishment in England, received the aid and the countenance of all classes of the community ; and among the friends of the institution were early ranked some of the most eminent and efficient promoters of popular improvement. Under such auspices the number of these schools

was rapidly increased, till one or more were established in every considerable town. A highly respectable and influential society has, within a few years, been instituted for the purpose of giving unity, extent, and permanency to the efforts of philanthropy in this interesting sphere of operation. Under the patronage of this society, Mr. Wilderspin, an early and zealous advocate of infant schools, and for some time the superintendent of the one situated in Spitalfields, has been of late employed in visiting the cities and larger towns of Scotland and Ireland, for the purpose of establishing schools of this description, and, according to the most recent accounts, is very successful in his object.

Whether such schools were needed in the United States, was at one time a question with many ; as there was an apprehension entertained, that by rendering the advantages of early instruction too easily accessible, or by *offering* them, instead of leaving them to be desired and *sought for*, parents might be rendered indifferent to their responsibilities, and slack in their exertions for their children. Some apprehended, also, that infant schools, having been originally intended for the benefit of that class of society whose daily and hourly occupations prevented, to a great degree, the personal discharge of parental duties, could not be productive of good in a community in which, from its peculiar frame of government, it is so emphatically the interest of all that a high degree of personal and domestic virtue should prevail, and therefore that the sense of responsibility connected with the parental relation should be deeply felt. Any means of diminishing this feeling would prove, it was said, an evil to be deprecated rather than an advantage to be desired. Others thought the very principle on which infant schools are founded, a wrong one—the benevolent desire to aid parental instruction and influence ; regarding it as doing, in some measure, a violence to nature, to step between the mother and her offspring, even for the purpose of assisting her.

These objections, it is believed, have been all refuted by the establishment and the actual operation of infant schools on this side of the Atlantic. It is found that, on examination, there are, in all the cities and large towns of the United States, a very numerous class of the population—chiefly, however, of foreign origin—situated exactly as the corresponding class in England ; from many (and some of these culpable) causes, unable to afford the education of their children, or unwilling to be at the

expense or the trouble. In these circumstances,—as positive compulsion is out of the question, in regard to the discharge of moral and personal duties,—the alternative is simply that of judicious and friendly impulse to the negligent, or the deplorable evil of a vitiated and degraded populace. On experiment, too, it is found that all the evils of gratuitous education are avoided, by merely reducing the terms of tuition, so as to meet the pecuniary condition of families poor in circumstances, but numerous in children, and by dispensing entirely with wages only in cases of extreme indigence. Very often it happens that in this way parents being enabled to educate their children, are induced to make exertions which they never would have made, had the school fees been left at the usual hopeless distance from the reach of their ability. To the poor, in a word, the establishment of infant schools proves a stimulus to industry, and not as had been fancied, an encouragement to sloth.

Neither is the responsibility of the parent in regard to the moral instruction of the child found to be diminished. Infant schools have, after fair experiment, proved themselves an effective aid to parental management,—increasing the moral sensibility of the child,—awakening the parent to new views and more constant exertion. Intelligence enters the poor man's dwelling in the person of his own child, and brings docility, and peace, and happiness along with it. True, it gives the young child an acute sensibility to the faults and the vices of its parent, (if any such exist,) but it is equally true, that, in well authenticated instances, the obdurate heart of a vicious parent has been touched by the innocence of his child, or pierced by an unexpected word of gentle admonition, such as the infant moralist had been accustomed to give or receive, when among his little school fellows. Mothers, too, have thus been restored to conscience and to peace ; and wives have acknowledged with tears of joy the reformation of their husbands, and the happiness which had come to dwell within their homes.

It is scarcely necessary to say that the objection against infant schools, which was founded on their interference with parental duty, has proved imaginary. The infant school is found to be a poor mother's best friend ; relieving her, during a great part of the day, of the care of that member of her family which is the most difficult for her to superintend and manage—the one between the youngest infant, (which with the household cares is sufficient charge, even to an able body and an active mind,) and the child who is old enough to go to a primary school. A sister

is, by this means, often released from premature domestic care, and left free to attend school, for her own improvement. The whole question now touched upon, with all its supposed difficulties, resolves itself into this shape,—Whether it is well to send young children to school a year or two earlier than has been customary, and to allow them the benefit of protection, care, and instruction, adapted to their tender age ? This question is fully settled by the effects already attending the infant schools. It is found that infants may not only be kept out of harm's way, and kindly tended, but that they may be kept constantly happy, and be actually taught much that is immediately useful to them as moral beings, and that serves to prepare the way for further instruction in other schools. Mind and body are both turned to good account ; both are employed in useful and pleasing ways ; both are gently treated and skilfully cultivated. In addition to this, the disposition is developed, and trained to rectitude and happiness ; and reason, in all its benignant influence, is brought out to mould the forming character. Let an observer look into one of our infant schools, and he will see a little community unperverted in understanding, fresh and uncontaminated in feeling, prompt and cheerful in action ; kindness and joy pervading the whole in common sympathy ; actions instantly approved or condemned ; all the natural and sinless propensities of animal and intellectual nature in free exercise ; admonition given in tones of constant gentleness ; instruction expanding and delighting, (never oppressing or straining,) the mind ; the whole soul, the whole being, not only unrestrained by arbitrary rule, not only permitted to act, but invited to act, and kept in agreeable action, unless when purposely permitted to rest. No parent, it is believed, has ever left such a scene, without wishing that all classes of society were furnished with such schools, adapted to their condition and brought to their doors.*

To enter into a detailed account of the exact number of infant schools, or of the children estimated to be benefitted by them, would occupy time which perhaps would be more usefully employed in general views of the whole subject, as a department of education, and as a source of valuable instruction to teachers and parents. It must suffice, therefore, for the present, to say that the infant schools, as they exist in England are do-

* Private schools for infant children, we are happy to observe, are now established ; and several are proposed in different vicinities within the city.

ing extensive good, by suiting the purpose of preparatory training for the National Schools, or those of the British and Foreign School Society,—a class of schools corresponding in some respects to the common or district schools of New-England. Children are admitted into the infant schools at any age, from that of six years to that of eighteen months ; and remain till they are transferred to the other schools mentioned, which they enter at the age of seven years.

The early age at which children are admitted to the primary schools of New-England, and those of this city in particular, which receive children at the age of four years, seemed to some persons to supersede the necessity of infant schools, or in fact to preclude their existence entirely. This objection to these schools, has, like all the others made on presumption, been set aside by experience.

The age from two to four years, is precisely that at which a child, whose mother is necessarily much occupied otherwise, is most exposed to danger, and most apt to commit petty faults. It is at this age that the mother most needs assistance in the charge of her offspring, and is consequently, though reluctantly, compelled to resort to the aid of an elder sister or brother, who must be detained from school for the purpose. It is at this age, too, perhaps an attentive observer of the circumstances of the poor would say, that the disposition receives that tinge of bitterness, which so extensively pervades the domestic temper and manners of the poorest class. The innocent little being who is so often thwarted in his wishes, and checked in his actions, and punished for unintentional transgressions, finds himself governed by a capricious and unintelligible authority. He sympathizes of necessity with the angry feeling of which he has been the temporary cause ; and he suffers in reality from the pain inflicted on him. By imitative instinct, he treats others as he is treated himself ; and long before he is old enough to become a candidate for admission to a primary school, selfishness, in the form of violence and ill temper, has got possession of his heart ; and the primary teacher must be efficient indeed, who succeeds in eradicating these. This is no picture of fancy. But assertion is needless to those who have been observers of these things ; and to others nothing but observation can carry full intelligence or conviction.

The *intellectual* not less than the moral interests of the rising generation plead for the introduction or the farther extension of

infant schools. Along with all due care and protection, much actual instruction may be afforded to infancy ; or rather the mind may be early set agoing in those directions in which it is to move, when the period of education has formally commenced. The infant stage of life may be seized as a happy opportunity for giving the mind a delight in natural objects and in useful knowledge ; for expanding it to the grateful rays of intellectual light, by a wise guidance of the warmth of the heart ; for making the young pupil an intelligent and exact observer of facts, an early disciple of nature and its sublime truths. If the little innocent is, according to the irrational though time-hallowed course, to be fastened down, at the age of four, to eight inches of space on a bench, and to the unnatural task of conning the arbitrary marks which are the representatives of speech ; if he is to be punished for attempting to change his irksome position ; if he is to be taught that it is a crime to smile, and an unpardonable offence to express his thoughts ;—let at least two years of his life be spent in freedom and happiness : give him so much time in which to think and act and move as a free agent. Do not begrudge him this season of natural and strong delight in animals and pictures, and new things and new thoughts. Do not hinder him from acting out his impulses and enjoying his nature ; for even thus his mind will have been so enlivened and strengthened, that he will prove, at the appointed time, more than a match for the stillest and the tamest pupil of a dull and mechanical discipline. But if all this is not to happen ;—if, as is every day taking place, a clearer light is falling on the subject of early education, and our methods of attempting to gain access to the mind are becoming more congenial, more intellectual, more gentle, more cheerful ; if the school room is not to be a place of bondage to body and mind ; if amusement and recreation are admitted within doors as well as without, and are blended with the exercises of intellect, and the whole course of instruction is ‘to pay homage to the mind and its Author ;’ then by all means embrace these early and precious moments, in which to begin this benign course of development and conscious progress. The good work cannot be commenced too early, if commenced aright. The first indications of the wants of the mind may be read in the natural actions and looks of infancy. Obey these ; and watch them, as they become daily more numerous and varied ; comply with all that are harmless ; follow this course, with the necessary modifications, through the whole period of education ; and there will be produced, what,

perhaps, has seldom yet been seen in the world of mind, an undistorted, uninjured, unrepressed, human soul, whose vigour, elasticity, proportion, and grace, are but dimly shadowed in the beautiful perfection of those human forms, which suggested the conceptions of the master pieces of human art.

Again ; infant schools are needed on the score of *health*, not less than of mental improvement. To the children of the poor, home has generally few opportunities to afford for healthful recreation. The common air and light of heaven are often in a great measure denied to infancy in this condition ; the unaided vigour of the constitution is left to struggle with hindrances, and not unfrequently sinks under the evils of neglect. Our primary schools seldom offer any salutary counteracting influence to early injuries of this nature : they are too generally situated so as rather to prolong or aggravate them. A change, it is gratifying to observe, is now making, by which, it is to be hoped, spacious and pleasant rooms will be furnished for these schools, and the health and comfort of the teachers and the children secured.* But this change, desirable as it is, produces of course no change on the condition of infancy—nothing to counteract the disadvantages of damp, unwholesome, unventilated rooms, at that susceptible period ; and it is one great purpose of infant schools to provide airy and comfortable rooms, in which the little pupils may spend most of the day. Were no other good whatever effected by these schools, who can estimate the benefit thus conferred by them on the community ?

✓ An important object in immediate connexion with our present subject, is the good effected by infant schools, through their influence on elementary instruction generally, and the useful hints which they offer for the management of primary schools, and even the arrangement of the nursery. Of these highly interesting topics there is now little room to treat ; and a few only of the more important can but be briefly mentioned.

The spirit of the methods adopted in the infant schools would contribute effectually to the improvement of all elementary schools ; for these methods are strictly *practical*.

In conducting the business of education, we are too prone to forget that our influence over the mind is not direct and immediate, and that whatever instruction leaves the mind passive

* It is proposed that the rooms for primary schools be henceforth provided by the city, and not by the teachers. More suitable apartments will thus be obtained without adding to the expense of supporting these schools, or occasioning loss to those who teach them.

merely, is of no real benefit. All living and expansive action in the mind, proceeds from itself and depends on itself. We may succeed fully in conveying to the understanding a given idea, and the intellect yet receive no benefit from it in relation to the purposes of education. To obtain any substantial benefit from an idea received, the mind must act upon it, must assimilate itself to it, must identify it with itself. The most effectual influence over the mental character, therefore, is that which consists in placing objects so skilfully before the mind of the learner, that he recognizes, by his own perceptive power, their individual and relative character, and acquires his whole knowledge of them by his own activity, and not by becoming the passive object on which the mind of his teacher is to act by inculcation. The same thing is true of memory as of intellect. If we would have any fact remembered, we must show it to the sense or to the mind—if we cannot do this, our next resort should be as vivid a delineation of it as possible, whether the representation be offered in the form of a picture or a written or oral description.*

Take, for an illustration, the science of grammar as commonly taught in elementary schools; and we find that these principles, though obvious, or at least readily admitted, are entirely overlooked. The first object with most writers on grammar, even when writing for children, is the perfect exactness of a definition abstractly. Hence the great number of abstract terms in all treatises on grammar. But abstract terms, to the juvenile learner, little accustomed to generalize things, much less thoughts or words, are seldom intelligible; and when they are so, the habits of his mind, running chiefly on particulars, render them of little or no use to him, as means of progress or improvement. Grammar, then, when taught after the manner prescribed in most books on that subject, proves commonly to the young mind a formal, dull, unintelligible, and apparently useless branch of study. It is taught, in a word, too theoretically and too systematically. By generalizing to the utmost extent the language in which we convey instruction, and leaving the pupil as few illustrations as possible, on which his mind

* In this view of our subject an additional value is imparted to that excellent institution, the American Lyceum; one of the objects of which is, to render associations for mutual improvement among adults, tributary to the improvement of elementary instruction, by furnishing from these sources the simple apparatus and natural specimens used in teaching the rudiments of science. Infant and primary schools generally will thus, it is expected, be provided with materials for rational, useful, and amusing instruction.

may alight and dwell, we flatter ourselves that we are at once expanding his intellect and condensing his thoughts, and subjecting his powers to a purely intellectual discipline. But in relation to the actual purposes of life, grammar is a practical and a useful science ; and he proves the best grammarian who has carefully observed the greatest number of *facts*, whether in single words or in phrases. Hence the well known circumstance, that many of the most eminent writers in the English language never studied a page in a book of English grammar ; and that not a few knew nothing of what is called the grammar of any language.

This illustration has been used—perhaps at the expense of having been found tedious. It suits, however, as well as any that could be found, the object of expressing the difference between the infant school method, and that which is too prevalent in other schools. In the infant schools, the pupils are made familiar with facts, with objects in nature and art ; and they are not required to classify these, till they have become acquainted with their points of resemblance and of difference. The grammatical study of words is but sparingly prescribed, and is never separated from a natural reference to the objects or relations which words represent. The mind is not deadened by receiving knowledge in unmanageable masses, or dissipated by acquiring it through the medium of general terms, or enfeebled by unnatural attempts to imbibe it through the sole channel of memory, or rendered superficial by never applying what is acquired. Every thing submitted to the mind is brought, as far as practicable, within the cognizance of the senses : is offered, if possible, to the imagination and the heart, as well as to the understanding and the memory. As under the genial guidance of nature itself, the whole being, physical as well as mental, is called into action : the body ministers to the mind and the mind to the body. Knowledge is thus made to flow into the opening mind through the appointed avenue of the senses ; and no overstraining ambition is permitted to distort the mental habits, by attempting to work upon the intellect directly and exclusively.

A beautiful feature in the infant school system of instruction consists in its *bringing forward all the faculties in proportion*. On the common plan of education the whole nature lies dormant, and neglected,—with the sole exception of the faculty of memory, and sometimes, incidentally, the understanding. Spelling, reading, arithmetic, grammar, may all be named as examples of this sort of tuition, when they are taught in the common me-



chanical way. As these branches form nearly the whole routine usually pursued at schools, the young labour, for the most part, under all the disadvantages of a defective and unnatural cultivation ; and the mind, unless thrown into very peculiar circumstances in the period subsequent to school days, retains more or less the feebleness and helplessness which such a discipline naturally entails. In some cases, the disproportioned exercise of the memory gives it a morbid excess over the other powers ; and in others, nature seems to resent the violence done to it ; and the memory, so often and so long strained by application, at last ceases to act with any degree of useful efficiency.

The affections, meanwhile, have become morbid from disuse ; and the creative fire of imagination has become dim. Taste, sentiment, character, force of purpose, energy of action, are sacrificed in a blind idolatry to memory : tameness, feebleness, and indolence are entailed on the individual, as his habitual attributes. Add to all this the neglect of the corporeal frame, and perhaps the fatal decline of health ; and the picture of prevalent education is complete. Is this description a fiction ? Who is there among the most favoured offspring of the system of education hitherto pursued, that can be pronounced free from the evils that have been mentioned ? Is there a reflecting man of our day who can say that his education, however ample, however splendid, has not proved entirely *disproportioned* ?

Now, the method exemplified so beautifully in the infant schools, addresses itself first and chiefly to the physical frame and the senses. Its leading object is the securing of health ; its next great purpose, is the cultivation of the heart ; and the exercise of the intellect is comparatively incidental. But this arrangement, so far from injuring the mind by neglect, only serves to inspire it with a healthy and natural vigour, which carries it onward in the career of improvement, with a velocity and a force never attained by the common methods of instruction and discipline. The human being is advanced as a living whole, and not in dissected and irregular portions.

The method of the infant schools is further recommended by the *natural and gradual progress* by which it leads the mind onward. The child's attention is turned first to surrounding objects, and not to books and lessons : nature, in its exhaustless variety and beauty, is laid open to his mind. Nothing is forced upon him ; and his advance is never hurried. By a gentle and silent guidance, adapted to the tenderness of his age, he is conducted from the observation of things to that of their relations,



thence to the tracing of thoughts, and thence to the study of language. All his movements are those of intelligence and gratification. How different and how unnatural the course usually pursued is, it is scarcely necessary to say ; violence, to a greater or less extent, being done to the mind, from the very commencement of its discipline, which consists in attempting to discriminate the confused and complicated characters used in the expression of thought.

The infant school methods are characterized by the *cheerfulness of their aspect* : they abound in amusement and recreation. Intellectual action thus becomes a spontaneous and pleasurable excitement ; as it would always be if rightly managed. The incessant alternation of activity and rest, gives no quarter to dullness and absence of mind. The glow of healthful feeling gives a force and buoyancy to the thoughts as well as to the bodily movements ; and this is no mean step towards habitual mental energy and moral courage.

On the prevailing plan of education, no definite time is assigned to mental recreation : it is left to be stolen, perhaps, from the hours of sober duty. The propensity to the indulgence of playfulness which seems implanted as a safeguard in every constitution, is quelled by the frown of authority, till the spiritless and exhausted mind yields itself to morbid lethargy and that quiescent inanition, which so often secure, at a cheap rate, the credit of gravity and wisdom. The necessity of corporeal recreation is freely admitted by every body ; but the advantage of mental relaxation is seldom adverted to. The professional man understands that if he would preserve his health he must ride or walk ; that he must refresh his eyes with the sunlight, and recruit his lungs with the invigorating air, and allow his limbs the privilege of motion. But propose to the same man the equally urgent necessity that his mind should be permitted to reinvigorate itself at the fountains of nature, or recreate itself among the beauties of art, or enjoy the delight of mingling in pleasurable sympathy with the thoughts and feelings of others, or rise for a time on the wing of poetry, or float on the stream of fiction, or watch the gleaming of wit and the play of humour—Speak of all this as essential to the full development and enjoyment of his nature, and therefore to the power of his mind, and the perfection of his character ; and you are not understood : at all events you are not listened to, or you are declared extravagant.

A close observer, however, of human nature might trace in the occasional depression or flatness of the mind, and the wandering of thought, which are so often complained of, by all men, the want of a healthful and inspiring mental regimen. In gayer communities than that of New-England, these things are better understood, and in some which are quite as grave, but perhaps more judiciously considerate of the human constitution.

In following these thoughts I have not left the subject of infant schools ; for it is among their many recommendations that they multiply the innocent pleasures of childhood, and impart a cheerful tone of mind, which naturally becomes the habit of after life ; that they anticipate and remove evils which too often arise from neglecting the natural propensities of the mind and the enjoyment of those intervals of healthful relaxation, which give elasticity to the spirit, and prepare it for vigorous, efficient, and useful activity.

ART. III.—Mr. Johnson's Introductory Address at the Franklin Institute, Philadelphia.

[In accordance with the intimation given at the close of Vol. III., arrangements have been made with a view to introduce in our subsequent numbers articles of the following description. Mr. Johnson of the Franklin Institute, Philadelphia, has obligingly afforded at our request, a copy of his address introductory to a course of lectures on mechanics and natural philosophy ; delivered before the Franklin Institute, on the 19th of November last.

In this discourse, the author gives a brief history of the progress of science, and, in conjunction with it, an account of the popular institutions of modern times. In this part of the address, the statements relating to the mechanics' institutes of France, will be found in a great measure original, as well as peculiarly interesting.

The mental benefits resulting from a general knowledge of the sciences form the next topic of the address. The immediate subject of the lecture, as introductory to others, is then presented ; and under this and the other heads of the address, many thoughts are incidentally introduced, which, we doubt not, will

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

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or at the singular forms and colours of the rocks which lie upon the surface ; but scarcely imagines that history is one day to convert the former into the basis of her theories, or luxury to render the latter subservient to the elegancies of life.

From the middle to the close of the eighteenth century the students of natural history, natural philosophy, chemistry, and mathematics, began to apply their respective discoveries to the purposes of life. They saw that the labours of science were but half completed when single *facts* had been observed, their *relations* to each other traced, general *laws* deduced from these relations, and a nomenclature of terms invented, by which those facts, relations, and laws could be conveyed from the mind of one philosopher to that of another. They felt that something more was wanting to accomplish the beneficent designs of nature's God in the arrangement of creation ; that the materials and principles pertaining to the construction of the universe, must be made familiar to every mind, not as objects of childish amusement or vulgar wonder, but of solid pleasure and substantial utility.

To this end, every device which unlettered ingenuity had contrived, to diminish manual labour, was examined at original sources,—in the workshop of the artizan ; the laws of mechanics, applicable to its construction, were adduced in order to suggest improvements or remove impediments ; new devices for the attainment of similar ends were often suggested ; and the spirit of invention, roused by a few splendid results, has, from the commencement of the present century, been moving forward, with a firm step, over the solid ground of science. Every application of mechanical principles which we witness, naturally suggests improvements or modifications in other processes with which we are acquainted. But when the principles themselves are misunderstood, the nature of the applications can be but imperfectly comprehended ; and much time and money may be wasted in fruitless attempts to accomplish what is in itself impossible. By making himself suitably acquainted with the elements of science the artizan is enabled to substitute enlightened theory and practice for that blind routine, which, having originated in ignorance, has been perpetuated by prejudice. It is not necessary that for this purpose he should waste his time in attempts to follow the philosophers through all the mazes of speculation ; in respect to many parts of science *his* labours begin where *theirs* have ended : the results of their abstract reasonings are made the bases of his practical operations. In other parts, the artist

may well demand rigid demonstration ; and this he *ought* to require in respect to those principles, which, not having the clearness of axioms, or the advantage of sensible illustration, are still of such practical importance as to be indispensable in numerous processes of art.

When entering upon our annual course of practical sciences, it may be interesting to glance at the actual state of things elsewhere, relative to the corresponding departments of instruction. We may thence derive some addition to the motives of interest, duty, and patriotism, which ought to inspire our exertions.

Mechanic's institutions, were, it is believed, first established at Glasgow, in Scotland, where the success attained was such as to cause them to be speedily introduced into Edinburgh and London, into Liverpool, Manchester, Birmingham, and Newcastle, so that, before the middle of 1825, more than thirty of these schools of practical instruction had gone into operation, throughout Great Britain. The number of these institutions in the United Kingdom is now said to exceed one hundred. In our own country, the example, set by the Franklin Institute, has been followed in the other principal cities of the Union ; and at the seats of some of our large manufacturing establishments, especially in the eastern states, courses of instruction have been given, libraries formed, and other means of diffusing the practical sciences have been devised. In the same section of the country, a class of institutions for the diffusion of popular scientific instruction, under the name of Lyceums, has recently been organized. In the space of two years since the first was founded, nearly one hundred of these establishments, are said to have been founded, in the cities and villages of New England. Their purpose is the promotion of mutual improvement among the members by lectures, conversations, and discussions, the formation of cabinets of mechanical models and philosophical instruments, and the preservation of specimens in the several departments of natural history. It is easy to predict, from observing the class of persons engaged, and the interest manifested in these institutions, that they are not destined to rise in a night and perish in an hour. It is sincerely to be hoped that the spirit which has led to these efforts, may, pervade and benefit every part of our country where skill and industry are duly estimated ; that this nation may, by timely preventives, be exempted from those appalling scenes of distress and outrage, the results of ignorance, improvidence, and want of thrift, which in

other countries render the labouring classes the sport of accident, or the victims of a reckless spirit of mercantile speculation.

No institution or course of instruction, expressly intended for mechanics, existed in France, until October 1824, six months after the establishment of the Franklin Institute, when the baron Dupin commenced his lectures before the conservatory of arts and trades at Paris. Such, however, was the success of this benevolent and patriotic individual, that before a single year had elapsed, his example was followed and courses were instituted in fifty nine towns and cities, scattered through thirty four of the departments of the French territory.

So deeply had every class of society become penetrated with the importance of this species of national instruction, that each seemed to vie with the other in efforts to promote its success.

In September 1825, the minister of marine issued a circular to the presiding officers of all the naval and other maritime stations throughout the kingdom, directing that the several royal professors of *hydrography* and *navigation* should give instructions to the labouring classes, two evenings in every week, on the subjects of geometry and mechanics applied to the arts.

By this single order the industrious classes in forty four seaports were furnished with gratuitous instruction in these important branches.

A like circular from the minister of the interior to the several prefects of departments, *recommended* the establishment of similar courses of instruction in all the important interior towns. This advice had in many instances been anticipated through the zeal and liberality of the inhabitants, their magistrates and municipal authorities ; and though the same advantages for offering the gratuitous services of public professors, were not held out by the government, as were tendered to the maritime cities, yet we find, that during 1826, more than fifty courses of lectures on practical geometry and mechanics were instituted in the interior towns alone. These added to those in the seaports before mentioned, have swelled the number beyond one hundred courses, simultaneously delivered by professors, many of whom were reared under the thorough discipline of the polytechnic school, the school of mines, and other eminent establishments with which France abounds.

Prussia and the Netherlands have likewise introduced this new species of instruction into all their populous manufacturing districts ; and the results are said to be of the most flattering nature. The form and texture of the products of industry are

found to be greatly improved, and the effective forces of men, of animals, and of inanimate nature, are applied in a manner to produce the greatest and most advantageous effects.

But however encouraging may be the consideration that the labours and studies on which we are entering, are at the same time prosecuted with zeal and success by thousands of our fellow men in distant lands, as well as in our own country, and however anxious we may be that those to whom we stand in the relation of *commercial* rivals, should not surpass us in skill or intelligence, yet there are not wanting motives of a higher character, impelling us to the prosecution of the duties here undertaken. Not only would we direct the attention of the mechanic to the scientific principles of his employment, in order to give a better form or greater value to the products of his labour; not only would we suggest such employment of natural forces as may redound to the greatest profit, and such uses of the abundant vegetable and mineral productions of our country, as may enhance their value as objects of national wealth; but we would develop the understanding, the faculties of memory, of reflection, and of judgment, in the *industrious citizen himself*, by furnishing worthy employment for his thoughts in hours of leisure, and by preventing the waste of those powers which heaven designed for elevated pursuits and contemplations. By furnishing hints for improving the processes of art we may also diminish the painfulness of manual labour,—increase the comforts of the artizan, and leave his mind more free for the prosecution of those studies which taste, inclination, or interest may lead him to pursue. By introducing ideas and habits of rational and orderly proceeding into the mind, and by pursuing a methodical course in the occupation of one's thoughts, an impression of the value and advantage of order is soon transferred to the whole character; the moral nature is elevated and purified, while the intellectual man is pleasantly and profitably exercised.

Does any one doubt the moral influence of these studies, and deny, because the mind is not employed directly on ethical disquisitions, that *any* moral effect can be derived from its habitual occupation? To solve his doubts, let him repair to that source of useful information, the workshop of the mechanic, and inquire, who is the apprentice or the journeyman that exhibits the most exemplary deportment, the most filial respect, the most conscientious regard to truth, the most industrious habits; that gains the unfeigned esteem of his associates, and the perfect confidence of his employer? He shall find him in the individu-

al who possesses a mind abstracted from trifles, follies, and vice, by the very love it bears to mechanical studies and pursuits,—in the youth, who retires from the place of labour to that of mental culture, or engages in curious investigations, and the construction of ingenious models to illustrate his favourite subject. Nor is it only the condition and character of the solitary individual, but the disposition of whole classes, that are meliorated by engaging in similar studies, by becoming acquainted with each other's modes of operation, plans of accommodation, and terms of art. A knowledge of what each can and does perform for the benefit of all others, creates a just sense of mutual dependence, and begets a due respect for the character and talents of our fellow men.

A detailed account of the application of science to the several arts and trades, exhibits this community of interests in the most advantageous manner ; while it infuses a liberal and generous spirit of emulation into the minds of the industrious.

What has just been said relates to the effects produced upon individuals and upon the limited societies which may pursue together the study of those practical sciences that apply to their several professions.

There is another light in which the subject assumes an importance still greater ; when we look upon the artizan as a private man, we find, it is true, reasons enough to induce us to wish for his intellectual cultivation ; but when we consider him as a member,—and a most important member of the great and growing republic under which it is our happiness to live, when we reflect that by means of his labours and inventions a real independence of foreign nations is destined to be established, and their calculations on our wants and necessities to be frustrated, we attain some conception of the true value of scientific instruction to the industrious citizen—a citizen, who, by pursuing the arts of peace, may enrol his name among the Rittenhouses, the Rumfords, the Fultons, the Godfreys, and the Franklins of a future age, and thereby shed unfading lustre on his country ;—a citizen whose career of glory and ambition will cost the quiet fireside no terrors,—humanity no tears.

The course of lectures which it is my duty to deliver during the present season, embraces *mechanics* and *natural philosophy*. A course of many months and even years would be required to exhaust these subjects, already so extensive, and still so rapidly enlarging. The selection of topics most worthy to be presented

to your consideration, where *all* are so interesting, is not the least difficult part of the duty of a lecturer.

The first of these subjects, that of *mechanics*, is naturally and necessarily divisible into two parts, which ought not to be confounded. The *first*, being purely speculative, determines, in a general manner all the laws of the equilibrium and of the motion of bodies, and applies those laws to the explanation of the principal phenomena of nature. This is called *theoretical mechanics*, and has been cultivated with the greatest assiduity, skill, and success, by men of transcendant genius, whose works are destined to shed imperishable glory on the human mind.

Of this character are the philosophical works of Newton, the *analytical mechanics* of Lagrange, and the *celestial mechanics* of Laplace.

The *second* part teaches the application of the same laws of equilibrium and motion to the purposes of society; directs the operative mechanic in the choice and use of methods adapted to the different effects which he would produce, points out the proper course of his operations, and warns him of the dangers against which he must provide. This part too has been cultivated, but (until very lately,) with less zeal, by a less number of philosophers, and with less apparent success, than the abstract branch of the subject.

It were indeed to be wished that philosophers would more frequently descend from their boundless 'domain of abstractions,' to the affairs of common life, and direct their efforts to the solution of some of those problems in practical mechanics which yet remain to be investigated. Would this be a less elevated and dignified employment, less likely to excite the admiration of the learned, than their present habitual occupations? But it would still be more useful to others, more profitable to themselves, and more certain to procure the esteem and gratitude of their fellow men. It has been justly remarked that Archimedes owes more of his renown to his useful mechanical inventions, to his defence of Syracuse by burning mirrors, to his hydraulic screw, and to his hydrostatic balance, than to all his admirable researches into the geometry of solids, and the geometry of conic sections.

Other causes, besides the love of philosophers for pure speculation, have tended to retard the progress of practical mechanics. The solution of the greater number of problems pertaining to this subject, requires the knowledge of details so numerous and so minute, yet so necessary to success, that most learned

men either despair of their acquisition, or despise to become acquainted with them.

On the contrary, practical men, to whom these details are familiar, either do not know, or do not regard those theoretical truths, which might expose defects in the methods which they follow. The advantage of any methods except those which they themselves adopt, is consequently unappreciated and blindly contemned.

Besides, the host of ridiculous or insignificant inventions, originating in the folly or ignorance of persons who imagine themselves mechanics by intuition or inspiration, has tended not a little to bring an odium on practical mechanics, and thereby to retard the progress of the science.

Another cause which has impeded the advancement of this important branch of knowledge, is the common prejudice that great mechanical discoveries are mostly due to chance. This prejudice is probably founded upon the fact that some celebrated mechanics have been destitute of theoretical knowledge, while equally famous philosophers have failed in their attempts to reduce their theories to practice. Chance may doubtless sometimes reveal important phenomena, or discover effects which had escaped the penetration of the learned. But to those who still persist in encouraging the hope that accident will supply for them the place of labour and study, I would exhibit the steam engine of Watt, the spinning jenny of Arkwright, the safety lamp of Davy, and the lightning rod of Franklin,—productions, in which the powers of combination, the patience of experiment, and the knowledge of theoretical laws, are far more conspicuous than any fortunate concurrence of accident.*

In view of these obstacles to the progress of *practical mechanics*, it has been thought expedient, in arranging the materials of the ensuing course, to depart so far from the usual routine, as to introduce into each lecture, besides the elementary instruction and demonstration pertaining to the subject, an exhibition of the structure, and an explanation of the use, of various machinery.

For this purpose two methods have suggested themselves. The *first* is to exhibit by designs and models complete sets of

* Those who would see the subject of practical mechanics more fully vindicated, may consult the '*Traité Complet de Mécanique appliquée aux Arts, par M. J. A. Borguis, Compositeur des Machines; discours préliminaire.*' To the above mentioned work the author of this address is happy to acknowledge himself indebted for many useful hints, and much valuable information.

machinery as applied to certain manufactures ; the *second*, to analyze machines with reference to certain leading principles in their structure, and exhibit each part separately. The latter method has been adopted, as having the advantage of making the subject more easily understood, and possibly of suggesting to each practical mechanic, some additional hints respecting his modes of constructing or applying machines and implements. By the aid of drawings and models it is believed that the principles will be made sufficiently perspicuous, and their applications intelligible to every member of the class.

It is not, however, to be forgotten that the class must consist, in part, of persons to whom the *elements* of natural philosophy are not yet familiar. In reference to this fact, the course is intended to embrace a view of the prominent topics in this branch of science, including the general and incidental properties of matter ; the laws of motion ; the conditions of equilibrium and rest ; the exemplification of those conditions in the several mechanical powers ; the causes which modify their action ; the forces exerted by solid bodies, or the general doctrine of dynamics ; the conditions of rest, of pressure, and of motion in liquids, with the mode of ascertaining specific gravities ; the general properties of aëriform and vaporous bodies, their motions, impulses, and other mechanical effects ; the reflection and refraction of light, with the two divisions of optical phenomena to which they give rise ; the reflection and radiation of caloric, with its expansive effects, and their application to instruments for measuring its intensity. The course will be terminated by an exhibition of the leading principles of electricity and magnetism.

All these subjects are more or less interesting in a practical view, and therefore deserve peculiar consideration. Several of them might afford me, separately, materials for whole courses, each as extensive as the one now contemplated.* Had these lectures been intended for nautical gentlemen, it would have required the addition of celestial mechanics or astronomy,—a subject in itself sufficient to absorb all the time now appropriated to this course. Incidental references only will be made to this branch, whenever they may be found convenient or necessary in our illustrations of other departments.

In discussing the properties and effects of the imponderable agents, caloric, electricity, and magnetism, it is not intended to

* The regular annual course includes twenty lectures.

invade the province of the chemist. Such effects of these agents, as do not permanently modify the properties of bodies, may be regarded as mechanical. Thus the development of electricity by the ordinary machine, its distribution, attraction, regulation, and equilibrium, are all related to the phenomena which will be presented, and the laws which will be observed, in other parts of our subject. The interesting experiments of Pictet and Leslie, which are intended to be repeated, will demonstrate that *caloric*, likewise, obeys the same laws of reflection as those which govern other matter, and the importance of this subtle principle in *practical mechanics* will be abundantly evident, when we observe that its expansive power is employed as a prime mover, in the most powerful machines ever invented by man. Having taken a hasty view of what has been done both at home and abroad, in ancient and in modern times, for the diffusion of useful knowledge ; and having slightly sketched the outlines of the course of instruction designed for this department, I shall at present trespass no longer on your patience than may be necessary to offer a few suggestions respecting the manner of teaching, applicable to the subject before us.

The method of teaching the sciences by lectures, has been exposed to two objections. It is sometimes said to exhibit only a superficial view of the subject which it professes to teach, or to display only such facts as may captivate the eye, without informing the understanding ; leaving the spectator in as good a condition as it found him, respecting his comprehension of causes and principles, with the exception of having produced a state of mind very unfavourable to profound study, and prejudicial even to the man of business.

At other times, on the contrary, we are told that an attempt is made to display the intricacies of a complicated subject, which require, in the auditor, much more time for reflection than the brief space allotted to a lecture will admit ; and that in the latter case the effort seems made, more to display the *speaker* than the *subject*.

The former of these objections is generally made by studious men, whose learning has been acquired wholly in the closet, and who fancy that no attainment is valuable, unless made by a process similar to their own.

The latter is heard from the mouths of those who are unfurnished with the elementary knowledge, the possession of which is implied by their attendance on a course of scientific instruc-

tion, or who are unwilling, during such attendance, to make the requisite efforts for supplying existing deficiencies.

Both of these objections obviously refer to abuses of what is in itself good, and cannot lie against the practice of teaching by lectures, when rationally pursued. When the scientific lecturer becomes a mere showman, intent only on astonishing idle spectators, he degrades both himself and his profession; and when the auditor feels no stronger incitement to attendance, than the desire to beguile an idle hour, he must find scientific lectures, however delivered, ill suited to his purpose.

Comparing the method under consideration with that which confines the student wholly to his private apartment, and his attention to the leafy volumes therein contained, we readily perceive the advantages of the former to consist in the warmth and interest which it may inspire by the presence of numbers, by the ✓ clearness of illustrations, and by the well known influence of the living voice, compared with the silence of the closet, where the reader often sits as cold and as dull as the statue of the author over whom he is poring.

But whatever may be the zeal of the instructor, his exertions will fail of their full effect, unless the learner is willing to make his mind something more than a passive receptacle of knowledge. Little that is truly valuable is ever obtained without ✓ active exertions. It would be singular indeed if the sciences formed an exception.

In the normal schools of France, to which we may safely refer as models in this kind of instruction, the professors accomplished the object of rendering the auditors positively active in the acquirement of knowledge by causing their instructions delivered extemporaneously, to be reported by stenographers, and printed and distributed with all convenient expedition, so as to be in the hands of every member of the class before the time appropriated to the conference which was held a few days after every lecture. At this conference the whole subject, as exhibited in the printed journal, was again brought under discussion in the form of a debate, in which the students, as well as professors, bore a part. By this arrangement, the interest of every subject was sustained, and carried forward, beyond the moment of its first development. The impression it made was deep and lasting. Such was the method of Laplace, of Haüy, of Monge, of Berthollet, of Volney, of St. Pierre, of Sicard, and Laharpe.

It was probably with a view to similar effects, that the board of managers of this institution recently adopted the plan of hold-

ing examinations at the commencement of each evening on the subject of the preceding lecture, in which such members of the class as are disposed to bear a part, will have an opportunity of participating.

The adoption of treatises suitable to be used as text books by those who may find it convenient to devote some time out of the lecture room, to the study of the subjects here discussed, has had a similar object in view.

When a physical principle is to be illustrated by experiment or otherwise, true philosophy requires that the illustration should precede the abstract statement. This method will be followed unless particular reasons shall dictate a contrary course.

In order fully to comprehend the demonstrations of physical science, some preliminary instruction in the science of numbers, in descriptive geometry, and in linear drawing, is soon perceived to be indispensably necessary. This kind of instruction, therefore, ought if possible to be obtained, by all who are desirous of turning to good account, the illustrations in mechanical philosophy. In the courses of instruction in this department of knowledge, which have been established in many parts of Europe, the elements of geometry have constituted an essential part. But as the means of elementary education are *here* more widely diffused, it is believed that an American audience, composed of practical men, will hardly be found wholly ignorant of the branches of knowledge just mentioned. Mathematical demonstrations, however, when *necessary*, will be as concise and perspicuous as the nature of the subject will admit.

The science of physics has far more to do with things than with words; contests about names, terms, definitions, and the spirit of dogmatism which led to these contests, belonged to the age which is gone by: no undue solicitude will therefore be felt about these, provided the subject matter itself be made clearly intelligible. To render the practical applications clear to every understanding, resort will be had to those sensible representations which the pencil can furnish to an indefinite extent.

In the analysis and explanation of machinery, it may sometimes happen, that parts deemed essential by practical men will not appear to obtain a due share of attention. In such cases, the lecturer will receive with peculiar pleasure and gratitude the suggestions made by those whose acquaintance with details, entitles their opinions to a respectful consideration. Accounts of useful inventions are widely dispersed on the pages of voluminous treatises, and of numerous periodical publications. Indus-

try and discrimination are necessary for him who would present a connected view of the subject, embracing the advantages of clearness and method. In the shops of mechanics, too, and in extensive manufactories, must a large portion of the requisite information be acquired by laborious and continued researches.

Your indulgence will, doubtless, often be put in requisition, to veil the defects of the lecturer, as he claims no exemptions from the imperfections common to mankind.

All he can promise, is, an assiduous application to the duties which have been assigned him, and a due appreciation of the encouragement which your kindness shall accord.

Happy will he be, if amidst the abundant streams with which science is every where enriching the world, he shall, like the cultivator who irrigates a favourite plat of ground, lead some humble rivulets where they may bless and fertilize a genial soil.

ART. IV.—*Education of the Female Sex.*

[Some of our readers will probably recognize in the subsequent paragraphs the sentiments disclosed in a practical and interesting series of papers, which lately appeared in the Boston Advertiser. The author, in the following article, resumes her subject, taking it up at the point at which it is left in those essays. It was our intention to direct the notice of our readers to these productions, as containing original and valuable views on female education, when we had the pleasure of receiving, through the intervention of a friend, the continuation of the writer's observations on this subject. From this source we shall occasionally draw whatever may seem likely to prove interesting or useful.]

If I have made an effectual appeal to the understanding and feelings of any, there will be a desire excited to discover, more particularly, the causes of so much practical error in domestic education, and infant management. It shall be my endeavour, at this time, to point out one or two of those which in my opinion are fundamental. The first and most obvious has been mentioned in my animadversions on the neglect of completing

the education of girls, as we do that of boys, and preparing them specifically for the station they were designed to fill, by giving them such a course of instruction as will render them competent to its duties. When a young married woman is first called to sustain the maternal relation, she is for the most part utterly ignorant of the whole field of operations into which she is so suddenly introduced, and in which she is necessitated to act. In this distressing dilemma what is she to do ? If this situation were distressing to her, if she really felt the full force, and saw clearly the sad consequences of her ignorance, the evil would in some degree be palliated. She would then reflect and consider, she would act cautiously, she would seek instruction, which proverbially is better late than never ; she would watch for indications, and try to reason upon them ; and her zeal, perseverance, and industry, gleaning knowledge wherever she could find it, would obviate some of the sorest troubles of her helpless state. As all this sometimes occurs, we see instances where the result is beyond our expectations, if not equal to our wishes. But, in the generality of cases, there is so much thoughtlessness of the evils to be dreaded, from an ignorance that all requisite knowledge is not possessed. Each demand for information comes unexpectedly, and unprepared for—and without awakening anxiety it is answered by an application for help to any one who happens to be present, and who can propose a plan for the existing exigency.

As it respects the health of the new born babe, there are a multitude of counsellors always ready to give advice and enforce measures on the young and inexperienced mother ; and in a multitude of counsellors there is safety, we are told by that word of truth, to which we can never appeal in vain, if we appeal rationally ; and to which we should always appeal for our principles of conduct. But as the Bible does not point out the necessity of selecting those counsellors judiciously, this part of the transaction is usually neglected ; and our friendly advisers are often as opposite in the directions they give, as they are wide from truth and nature. Nevertheless the advice of one is followed now, that of a second the next time ; and thus the infant becomes a subject of experiments ; and well is it for the helpless creature, if none of them are fatal, as is sometimes the case ; or seriously injurious, as very frequently happens. That it can escape all evil consequences no reasonable mind will believe ; and the fact accords with rational expectation ; as the inevitable sickness of some kind or other, of the generality of

new born infants, sufficiently testifies. The question is, how could the state productive of these evils be avoided? I answer without hesitation, how it ought to be avoided; though I am by no means able to say how, under existing usage and prejudices, it can be altogether changed. But in my view it is an imperative duty of every young lady, previous to her becoming a mother, to seek that instruction she will require to guide her conduct in every particular respecting the management of infant children. By the aid of a sensible, able, and judicious physician, whose age, experience, and knowledge, were such as might be confided in, she could be directed to a course of reading and reflection, and otherwise led through a field of appropriate studies, which would gradually prepare her for one part at least, of the important task about to devolve upon her; and when the period of action arrived, feeling herself somewhat competent to directing all that is required to be done, she would firmly resist the intermeddling of ignorant attendants; and unharrassed by anxiety and unalarmed by fears, she would steadily and calmly pursue the right path, and find the reward for her devotion to duty, in the health and happiness of her infant.

If a young mother is generally ignorant, even after her babe is in her arms, what is the right method of physical treatment, this is but part of her misfortune. I call it misfortune, because that which would be folly and wickedness if it were wilful, becomes misfortune, when it is the consequence of errors in previous education, which the individual had no power to remedy, and of the existence of which she was unaware. Though it is the bodily health of the infant alone, that claims the attention of parents and nurses generally, it is the mind which suffers most from ignorance of the proper methods of fostering, invigorating, and developing it; and from the pernicious impressions that ignorance is constantly the cause of its receiving. The young mother, affectionate and devoted to her child as she always is, and anxious and determined to do every thing required for its health and happiness, is thus constantly neglecting and injuring both, from ignorance of what she ought to do. Had a similar plan to the one recommended for gaining a knowledge of the physical treatment of children, been pursued by the parents to complete the education of daughters, in regard to the mental development, the cultivation of the affections, and a proper discipline of the intellectual habits of infants, the frequent thoughtlessness and ignorance which prevails on this subject would have been obviated. If the young lady had been placed in a situation where a proper sense of her duty would be awakened, and

where she could have gained instruction on the deep subject of the human mind, and the formation of character, had she been taught to comprehend the power of the first associations, the natural development of the faculties, the true source of ideas, and how much their just combinations depend on circumstances which a watchful mother can control ; had the most judicious methods been unfolded to her of associating and impressing what is right and true, and of preventing or removing what is wrong and false ; in short—had she been duly initiated into the art and the principles of nursing her child's mind from its birth, by the best instruction to be procured on this important branch of early culture, though she might be imperfectly prepared from want of experience, yet she would be enabled to go on in her daily task securely and happily to herself and to her offspring. Gaining more and more knowledge from daily observation, reflection, and application of her previous reasoning, she would gradually advance in the science ; gently and naturally enticing, as it were, her little one after her ; and leading it step by step to those habits of thought and conduct, those happy and delightful associations of the pleasing and good, the true and desirable, which will result in her own heartfelt satisfaction, and the welfare and constant enjoyment of the little being committed to her care and guidance. In this happy result of the efforts of a young woman to qualify herself for the discharge of the maternal duties, by a judicious course of reading, study, colloquial instruction, reasoning and reflection, and whatever other means may be wisely selected to effect so desirable an object ; I am presupposing the character of the individual to be of the right cast ; her mind disciplined, affections regulated, temper subdued, and moral habits, as well as religious principles fixed ; where this groundwork to receive and duly appreciate such instruction is wanting, the labour for a young mother is doubled and trebled. And as I fear this is often the case, nay, as I know it positively in many instances to be so, it will be necessary to take it into consideration ; and at least to make what is, and what ought to be, the state of mind, temper, habits, and feelings of young women thus situated so apparent, that no reader may mistake, when applying my observations to her own character. I intended also to explain what I conceive to be another fundamental cause of the wrong management of young children. But my subject runs into so many particulars, in my endeavour to illustrate it sufficiently to make it entirely practical, as to render me prolix ; and lest I should also be tedious, obliges me to defer, for the present, any further observations.

ART. V.—*American Lyceum, or Society for the Improvement of Schools and the Diffusion of Useful Knowledge.* Boston. 1829. 8vo. pp. 16.

THE institution which this pamphlet is designed to promote, is of a character peculiarly interesting. It forms one of the numerous results of that earnest desire of knowledge, which so extensively characterizes the present stage of the mental progress of society. It is, at the same time, original in several features of its design and organization, by which it is specifically adapted to the condition of the people of this country. It does not confine its benefits to any class, exclusively, but, on the contrary, effects its great objects, in proportion as it secures the interest and the cooperation of all. It has no peculiarity in its plan, by which it can be hindered from receiving and dispensing knowledge to any extent ; and, as far as its influence reaches, it facilitates an approach to a beneficial equalization of knowledge,—an object of great moment to a community organized by such institutions as ours.

The system of universal education, which has been established in so many of our states, may be supposed by some to be, of itself, a sufficient advance towards such a result. Elementary instruction, however, (which is all that common schools can afford,) is but the letter and not the spirit of general intelligence. An institution is still needed, which may give such an impulse to the popular mind as shall carry it beyond the limits to which it is too generally confined, and turn early education to account, by imparting a desire for information, a taste for reading, and habits of thought.

Whether the opportunities offered by the whole range of our various schools and other places of education, are adequate, in all respects, to the great object of rendering all classes, and every individual in our community, enlightened men, is a question, not yet fully answered by actual results. These institutions are numerous ; many of them are excellent ; and all of them are improving. None of them, however, suit the great purpose of creating and sustaining a strong desire for knowledge, at that stage of life, in which the mind is apt to be too much absorbed in the engrossing concerns of business, or to be narrowed by application habitually confined to the limits of professional subjects. The point has never, perhaps, been fairly put to proof, whether the mental faculties might not retain, in

mature years, the freshness and the pliancy of youth, by being kept in constant advance on new and interesting objects, instead of being permitted, as is now too customary, to lose, after a certain time, the habits of systematic discipline and regular action. An institution which should prove successful in calling the attention of all classes of minds anew into the field of application and research,—an institution which might assume the adult, in all conditions of life, as its pupils, and send them out into the great domain of human knowledge, with the alacrity of youth and the seriousness of manhood, would open an indescribable prospect of attainment to intellectual industry. Were the intellect, in all its variety of individual character and spontaneous direction, and in all its acquired diversity of education and pursuit, sent in quest of results which were to be brought into a common depository ; all minds might be enabled to contemplate science, divested of unintelligible nomenclature and sophistical perplexities. Knowledge would be offered in that variety and abundance which would be a natural result of its being drawn from so many sources, by the labour of the skilful and the zealous. Who can compute the benefits which might thus be dispensed over the whole circle of society, enriching and ennobling the mind of every individual, and constituting him a competent instructor, in his own sphere, of that generation which is to take, as its starting place in the pursuit of knowledge and virtue and consequent happiness, ‘the point to which the mind has been led by the progress of all preceding ages?’

Is the result here contemplated an imaginary one ? Look to the mechanic institutes of Great Britain and France ; and see the artisan acquiring, at his resting hours, as much knowledge of several departments of science, as was furnished to the college graduates of the last generation ; or observe him leading to the lecture room his son, yet in boyhood, to partake in his father’s pursuits and pleasures. Who will venture to say to what elevation of soul that boy may not attain ? Yet all this is but a step towards a general result.

The institution to which it is our intention to restrict our subsequent observations, is peculiarly adapted to the community in which it has sprung up. It is not, like the ‘institutes’ established in other countries, restricted to one class of society. Its form and character are as various as the condition of the vicinities in which it happens to exist. It is also subdivided as occasion requires, so as to suit every variety of objects. Its

only uniform and unchangeable purpose is the aim to diffuse knowledge. It embraces persons of all ages and of both sexes and of every variety of occupation ; furnishing instruction, entertainment, and employment to all. Thus, in a country town, it brings into the same room, the clergyman, the lawyer, the physician, the teacher, the farmer, the mechanic, the manufacturer, for mutual assistance in the acquisition and communication of knowledge. The exercises which are prescribed are chiefly lectures or conversation, illustrated by simple experiments, performed with common and accessible apparatus. Instruction is imparted in plain and familiar language, principles are applied to practical purposes ; and, during these expositions, not the least attentive portion of the audience is sometimes formed of females and children, who, in common with others, are substantially and permanently benefitted by what they hear and see.

The professional man is led to review his acquirements, in order to impart what in them is generally useful. He obtains valuable information, drawn from the studies of a different profession from his own ; or he listens with advantage to the statement of important and interesting facts relating to agriculture or manufactures. The teacher increases, in this way, his stores of interesting instruction. The mechanic and the farmer interchange useful knowledge, or obtain clearer light on subjects connected with health, with morals, with history, or with legislation. The scarcer minerals and plants of the vicinity are perhaps deposited in the common treasury, after having been described and discussed according to their properties and their classification. The female mind is thus furnished with its share in the great banquet of science. The mother is enabled to become more intellectual in her instructions to her little ones ; and the children who are old enough to accompany her, or their father, here acquire new thoughts on the value of knowledge, and the uses of education ; and thus learn to cooperate intelligently with their teachers in the business of mental cultivation.

Another and a general benefit also results from the meetings of Lyceums. Intellectual intercourse aids good neighbourhood, and promotes intelligent conversation. It brings together those who had been parted by sectarian division, and affords them common ground on which to meet and converse as friends. Nor are unanimity and harmony the only moral effects of this intercourse. Frivolous and questionable amusements among the young, are not unfrequently abandoned for pursuits more

congenial to the intellectual nature ; and the change of objects is not attended, as in other cases it has been, with any injury to health, by diminishing activity. Excursions to the forest for plants, and to the mountain for 'specimens,' or experiments in the garden, the orchard, or the field, are made to combine health, pleasure, and instruction ; and the materials accumulated from these sources, furnish mental employment for the evening. Such, to a greater or less extent, according to the length of time a Lyceum has been in operation, are the results which accrue from it. The minds of all classes of its pupils, and especially the susceptible faculties of youth, are in this way enlightened, elevated, and purified to an extent inconceivable by those who have not had opportunity personally to observe the effects of this truly excellent institution.

Here we cannot omit the opportunity of giving a brief anecdote, in illustration of what we have just stated. A few years ago, a young woman, (residing in a parish situated not far from Hartford in Connecticut,) became so much interested in some remarks which she happened to read on the subject of geology, as to feel desirous of obtaining instruction in that department of science. An opportunity offered itself, by an individual visiting in the village, who was induced to make a short stay, and in that time to give a few lectures, and make several excursions in quest of specimens. Previous to this time there was not, perhaps, an individual in the place who knew anything of the science. But the young lady who has been mentioned, was successful in making up a class of her acquaintance ; and, within two years, the impulse thus given to the minds of young people was so extensive, that there were in existence, in the town alluded to, and its vicinity, numerous collections of specimens, embracing, perhaps, every accessible variety in that and the adjacent regions. The cabinet of one of the more diligent pupils contained, at the time mentioned, an amount of five hundred articles.

In illustration of the perfect simplicity of the plan of the Lyceum, and its easy adaptation to circumstances, it may not be uninteresting to mention the origin of the first, probably, of these associations in New England. Two teachers, boarding in the same family, proposed, as a pleasant and useful way of spending one evening in the week, to read to those of the family who chose to attend, one of the 'Conversations on chemistry,' explaining what might not be otherwise understood, and performing the easier experiments. The family invited a few

neighbours to the exercises of some of the first evenings. But the room was soon found too small to accommodate all who wished to attend ; and the school room was obtained for the purpose. Conversations and questions on the subject selected for each evening, were encouraged ; and, shortly after, regular meetings were held for mutual instruction on other subjects besides that originally introduced. Classes were formed for each of those subjects ; and every class occupied an evening, or a part of it, in conversation and experiments for their own mutual instruction, and, at the same time, for the benefit of the other classes. The meetings were held more frequently than at first ; and thus, in the course of a single winter, a great variety of useful and important subjects were studied and discussed ; while, by the subdivision and classification of the exercises, each member of the association was enabled to devote his chief attention to the branches most interesting to his mind, or most intimately connected with his daily business.

The Lyceum, though thus evidently adapted to the circumstances of the inhabitants of a village, by the few demands which it makes for preparation or preliminaries, and the moderate expense at which it can be maintained,—is not by any means necessarily restricted to a narrow scale of operation. With liberal arrangements, it may be transferred to any sphere of intellectual condition or progress. It would greatly accelerate the advancement of the elder classes at academies and preparatory schools, at high schools and at colleges. Indeed, a weekly meeting for the interchange of acquirement, would be, perhaps, no slight aid to instructors themselves.

Literary clubs, and especially those formed by the professors of colleges and universities, are now out of date, in most parts of the world. With all their faults, however, they served many excellent purposes which, even in our day, have not ceased to be desirable. The familiar meetings of the intellectual *primores* among our fathers, were admirable opportunities of personal and professional improvement. True, they were sometimes abused into occasions for vanity and display ; and their inspiration was too frequently derived from something more palpable than ‘the wine of immortality.’ But objectionable as they were in some respects, they still dispensed much good. They kindled afresh the minds which were shedding light on all cotemporary intellect,—the minds which we of this generation were early taught to venerate as the great fountains of instruction. May

not something of a similar, though a more sober, character, be devised by the instructors of the present day ?

Seclusion is favourable to thought. But this maxim needs a free interpretation. The art of conversation—that most valuable and difficult attainment—is more essential to a teacher than to any other man. Yet no class of men, perhaps, more sedulously avoid appropriate opportunities of acquiring it. Stated meetings of the literary and scientific instructors at our highest institutions, would probably not only be attended with immediate professional benefit, but through the influence of example, would operate powerfully and beneficially on the minds of the young, and cherish that spirit of personal application and severe study, which is indispensable to the true prosperity of seminaries of learning.

The adaptation of the Lyceum to the intellectual interests of cities, is at present a subject of discussion. But inquiry on this point is perhaps superseded by facts already familiar. We may refer, for instance, to the city of Boston. Here, we can enumerate several institutions or associations, all corresponding to the Lyceum, or embracing a part of its objects, and therefore bearing unquestionable testimony to the demand for Lyceums in cities. In Boston, there are already established the lectures at the Mechanics' Institute, and at the Mechanics' Association, besides occasional public lectures by individuals,* and private circles formed for various objects connected with intellectual improvement or gratification. These all suit in their respective places, the objects of the Lyceum. It is thought, however, that there is still room for a course of lectures, such as may lead to the formation of local associations in various parts of the city. These associations, it is believed, will become numerous as soon as an appropriate course of lectures shall have been established, to furnish them with subjects for exercise, and to give a direction to inquiry and reading. The lectures are expected to be of a general character, such as may render them useful and attractive to young people engaged in mercantile or miscellaneous business. Teachers in the elementary departments of education, and the instructors of Sunday schools, will also be furnished, through this medium, with information which may afford useful materials for personal and professional improvement. Parents, and in particular mothers, will, it is to be

* As an instance in point, we may mention the course of lectures now delivering by Mr. Holbrook, which is chiefly designed for the benefit of Sunday school teachers.

subjects many of which may form instructive and pleasing topics of conversation with young children, and may contribute to give hoped, embrace such opportunities of becoming acquainted with their minds an early and salutary direction towards the vast stores of information, which are contained in external nature. The infant schools show strikingly how ready the youngest children are to receive instruction on such subjects, and what a benign power over the dawning mind of childhood may be acquired by teachers and parents who direct their own attention to these departments of science.

It is perhaps one of the happiest features in the plan of the Lyceum, that it is so devised as to suit the local circumstances of any part of our country ; adapting itself to the wants of villages and neighbourhoods, while, in its ultimate extension, it may advantageously, and, at the same time, easily, become a great national institution, comprehending in its influence the collected advantages of the general associations formed in towns, counties, and states. The benefits which might hence result to the interests of popular education, in all parts of the Union, are great and obvious. Through this channel, the improved methods of instruction and the general diffusion of education, which characterize one region of our country, might be expeditiously transferred to others ; and the great bond of moral and intellectual union existing among these states might thus be strengthened and extended. That this result is highly probable, will be evident to all who recollect that the main objects of the Lyceum are the dissemination of knowledge, and the improvement of schools,—not through the comparatively slow process of legislation, or the progress achieved by individual effort, but by the direct action of general sentiment among the people, and by their mutual and combined endeavours. The object to be promoted by this concentration of effort, is one universally intelligible. It involves the social and personal interests of the whole community, in conjunction with those which, with more or less force, are felt by every parent who takes an intelligent care of the education of his children. Extensive results require, it is true, adequate time in which to be matured and rendered apparent. The public mind, however, is already in a good degree prepared for them. In the state of Massachusetts, town Lyceums are, in several instances, uniting into general associations for their respective counties, on the plan presented in

former numbers of this journal.* In Worcester county, such an arrangement has been for some time matured ; as those of our readers will recollect, who perused the closing number of our last volume, which contained the address of Mr. Barton to the delegates from the various associations in that county.

By those who are acquainted with the general feeling in regard to this institution no doubt is entertained, that, at the requisite interval of time, the next step in the progress of union and cooperation will be taken, and a still more general society formed, comprehending a representation from each of the county associations. There are, we are aware, individuals who look on these more extensive measures with a degree of anxiety. Happily, there is but one sentiment on the value of the local Lyceums—indeed there can be but one, in the minds of all who derive pleasure from the contemplation of the mental advancement of society. The apprehension above alluded to, is grounded on a mistrust in relation to the expediency of the general principle of associations formed for any object of a moral nature. The tendency of all associations of such a kind, is, in the opinion of some, to diminish individual effort, by diminishing individual responsibility, and to merge individual character and influence in those of a mass,—removing or impeding, in this way, the action of some of the best motives by which human nature is actuated, and accumulating and concentrating a power which, in the hands of the unreflecting, may be wielded to the detriment rather than to the benefit of society. To us it seems, that, in this view of the subject, one great and important principle is entirely overlooked :—we allude to the fact that every step in the progress of the Lyceum, or of any other popular institution for disseminating knowledge, is rendered safe, by the wider diffusion of intellectual light by which it is attended. Detach the moral influence of a Lyceum from its intellectual character, and you do indeed make it an engine of uncertain operation and questionable results. But fortunately this cannot be done. The moral power acquired by these associations is the pure result of intelligence, and its character is thus secured and guarantied in favour of mental freedom. Every Lyceum is, in fact, a local safeguard of liberty, imparting a nobler impulse and opening a wider scope to the general mind, by the light which it sheds, and the energy which it excites. The general Lyceums suit the same purpose, only in a more exten-

* See in particular vol. iii. p. 503.

sive sphere ; the diversity of opinion on moral and religious subjects, which exists among its members, being a sufficient security that no injurious exercise of moral power will ever be attempted.

The Lyceum, however, it should be recollected, has asserted no claim to the sort of influence which is dreaded by some. Such influence can only be incidental. The institution in question professes to be one of an *intellectual* character ; the operations about which an apprehension is entertained, are designed solely to facilitate intellectual objects ; and these, it should not be forgotten, are, as far as they have been attained, found to issue in unquestionable good, in the opinion of individuals of widely different moral sentiments, and in local situations where public opinion is pretty equally divided on several important points of religious faith. For our own part, we hail this pacific and benign institution, as a friend to the general peace and harmony of the community ; and regard it with peculiar pleasure, as offering, in some measure, an antidote to the differences of opinion and of feeling, which so generally exist on matters of belief. Much more might be said, here, on the impossibility of collective Lyceums producing any other than salutary effects on the mental condition of the community. In particular, the safety of delegated and representative agency might be advanced. But the limits of this article compel us, for the present, to omit the consideration of such topics ; and, indeed, it is perhaps unnecessary to enter upon a laborious argument against an apprehension so vague as that to which allusion has been made. There will ultimately, we believe, be but one opinion as to the safety of entrusting the human mind with knowledge, or a community with facilities for diffusing it.

It may not be amiss, however, to state here a few of the advantages which have already resulted from the combined operation of Lyceums, when associated in towns and counties. Peculiar facilities are thus afforded for the acquisition of local information. Topography, mineralogy, botany, and zoology, may be selected as instances. An unassisted individual, or a single association, must prosecute these branches of study with great labour or expense,—and, after all, but imperfectly. Establish a number of Lyceums over the surface to be explored ; and the labour is so subdivided, and is thrown into such a number of hands, that a thorough and extensive investigation is easily and readily made. By the intercommunication of these establishments, a teacher or a parent becomes possessed of a

vast accumulation of the best materials for instruction ; the student is furnished with objects of application ; knowledge is given and received ; and the sphere of mental action and of mental opportunity is greatly extended to all. But without a regular arrangement, resulting from organization, no facilities of this nature can be certainly or permanently afforded.

Another advantage of union and cooperation among Lyceums, is the interchange of libraries, specimens, apparatus, and lectures. The benefits resulting from such arrangements, it is unnecessary to describe in detail : they multiply, to a vast amount, the mental resources of the community, and constitute every individual rich in intellectual advantages.

Another important object to be gained by uniting the several Lyceums in a county or a state, is a beneficial uniformity in methods of instruction at our common schools. These have hitherto varied at the caprice of every successive teacher ; and the perpetual changing of books, systems, and branches, has harassed the parent without benefitting the pupil. The same teacher, (it happens from various causes,) is seldom long employed in the same vicinity ; and, when a change takes place, the children instead of going regularly forward in a course of instruction, are usually put back to a new elementary book, which happens to be preferred by the new teacher. Year after year the schools are subjected to the repetition of these evils, which can be effectually checked only by the influence of a general institution, such as the Lyceum, where teachers themselves may be thoroughly taught, and acquire such light on the subjects which they teach, as shall lead to a general acquaintance with the best means of imparting knowledge, and, by these means, to a sufficient degree of uniformity to avoid the consequences of incessant change, and irreconcilable diversity in modes of teaching.

As an institution adapted to the advancement of popular education, the Lyceum possesses many excellent characteristics. The general and substantial improvement of education cannot be made to proceed from specific measures. Legislation to this effect wears too much the aspect of compulsion ; and a seminary instituted expressly for the instruction of teachers would, in all probability, be found a remedy too costly for the means of individuals whose remuneration for their daily labour should be as low as the rate now common in the payment of teachers. A school of this kind supported by the state, would need a vast ap-

propriation, to render it useful to all who would be desirous of partaking in its benefits.

The Lyceum offers to teachers excellent opportunities for the general improvement of the mind on various subjects connected with their daily business ; and in most instances a course of appropriate professional reading and conversation is added to the other exercises of the institution. The effects which have followed these arrangements, are beneficial and extensive, beyond the conception of those who have not had personal opportunities of observing them.

It is a peculiar characteristic of the Lyceum, that, while it renders effective aid to education, by the opportunities which it offers to teachers, it communicates an intelligent and deep interest in the prosperity of education, to the mind of every individual who takes part in its exercises, and thus calls forth the whole intellectual and moral force of vicinities, in favour of the improvement of schools. In this respect, in particular, it is happily suited to the circumstances of American society, in which all effective general measures for the promotion of common education must emanate directly from the people. The Lyceum is on this account better adapted to extensive usefulness among us, than any of the popular institutions which have arisen in Europe, could be ; most of these being restricted by their objects, and even their designation, to the interests of particular classes of society. The Lyceum admits members from every condition of life, and from every occupation, and is peculiarly accessible to the agricultural class,—a circumstance by which it is eminently adapted to the actual wants of our population.

The four great requisites of an institution for popular improvement, are lectures, or conversation ; mutual, interrogatory, and experimental exercises ; books ; and apparatus. These are the chief implements in the whole process of mental cultivation ; and as surely as they are introduced into the humblest village, there will spring up intellectual activity, efficiency, and skill, extensive and enlightened views on every subject important to human welfare, intelligence and enterprise in business, and a moral elevation of character, insuring a pure and diffusive happiness.

For these reasons it is, that we wish to see Lyceums established throughout the United States, to see them promoted by general association, and every other facility required for their extensive and free and permanent operation. Whithin a short

time after the general organization of the Lyceums in a state, (take that of Massachusetts for example,) several objects may easily be accomplished, which will contribute immediately and effectively, not only to the diffusion of intelligence, but to a fuller command of the natural resources of the state. In many of the town Lyceums, the requisite investigations are in progress for the preparation of histories of their respective towns; surveys of the surface and soil of their vicinities, and, in not a few instances, geological surveys, are advancing; while, in other places, much attention is devoted to the construction of local maps. That the inhabitants of all parts of the state may be enabled to avail themselves of the interesting and important facts thus ascertained, a common deposit is required, and a regular channel of communication becomes indispensable. Without a definite organization, however, it is in vain to expect such results. In a political point of view, also, the effects of the regular and general operation of Lyceums become highly important. Extensive and peculiar facilities are afforded by these establishments for prosecuting public enterprises connected with internal improvement, in the department of roads and canals, by the minute and accurate local knowledge which they bring to the aid of such undertakings. But on topics of this nature we have not at present room to enlarge.

The Lyceum, when considered in its connexion with the advancement of general education, appears likely to prove as permanent in its operation as it is deservedly popular in its character. It offers no impediment to existing institutions of any order: it enters into competition with none: it cooperates with all in facilitating the acquisition of knowledge, and in producing and cherishing a desire for superior instruction. Through the services of the professional men who rank themselves among its friends and patrons, it derives much benefit from the higher seminaries of learning, and by the light and guidance which it draws from such sources, tends to make the whole community more fully acquainted with the value of these institutions. To this class of men the Lyceum has been largely indebted for the improvement of its exercises, and the rapidity with which it has advanced in general estimation; and on them it must frequently depend for the commencement of its local operations. To this last fact we should be happy to attract the attention of men of liberal education; since, through their aid and exertions, so much may be accomplished in enlarging the sphere of mental

action and enjoyment to all classes of society. The benefactors of the mind are the greatest benefactors of the human race ; and to this noble eminence may every man of education raise himself, who is willing to impart a portion of the mental wealth with which he has been entrusted, and to aid others in their progress towards the expansion and elevation of soul, which he himself enjoys as the great good of his intellectual advantages. If one or more professional men in every town of New England would lend their countenance and assistance to the establishment of a Lyceum in their respective vicinities, the stream of useful and scientific knowledge might be brought to the door of every family ; and thus would a true and full value be given to the benign system of universal education.

The pamphlet which has been the ground of the preceding remarks, gives a clear and concise account of the character and design of the Lyceum,* and indicates some of its prominent benefits. It is well fitted to prepare the way for the establishment of such associations where they have not been introduced. But as it is already disseminated pretty widely, and is probably in the hands of most of our readers, to make quotations from it would be unnecessary. A large edition of it, circulating generally, with copies deposited at places of common resort, would, we think, prove useful to the moral interests and character of society. In the meantime, it will, we hope, be extensively lent for perusal, by all who are in possession of it ; as the good to be thus effected by it is all the compensation desired from it by

* Of the propriety of this designation being attached to a popular institution different opinions are entertained. The name, however, has now become current ; and a change would be impracticable. It would be but justice, however, to the individual who originally applied the name, to state that, at the time when it was adopted, the only institutions which resembled those for which the term is now used, were the *Lyceæ*, such as still are found in various parts of the country, but established chiefly for objects connected with natural history. From these the name was borrowed, in anticipation of what in several instances, has actually happened ; societies formed for the limited purposes just mentioned, having identified themselves with what are now generally called Lyceums, by extending their plan so as to admit the natural sciences generally, and along with these several other branches of useful knowledge. It was not, then, it will be observed, the ambition of assuming a learned name, that led to the choice which was made, but the natural concurrence of circumstances. On the whole, there seems to be no solid argument against the denomination selected : and it was certainly a matter of consequence to adopt one which should not tend to limit the operation and the advantages of this institution, by apparently restricting its members to one class of society or one department of business. No one *English* word can be found which would suit the purpose of distinct designation ; and if no evil more serious should ensue, than the formation of an awkward plural, (*Lyceums*,) there will ultimately be little room for regret on this score.

its disinterested author,* who, in the true spirit of philanthropy, has devoted so much of his time and labour to the intellectual interests of the community.

ART. VI.—*Maternal Instruction.—Hints to Parents. In two parts: Part one, On the Cultivation of Children. Part two, Exercises for Exciting the Attention and Strengthening the Thinking Powers of Children. In the spirit of Pestalozzi's Method. From the third London Edition. Salem. Whipple & Lawrence. 1825. 12mo. pp. 72.*

Much has been said, and a few excellent works have been written, upon the subject of early education. Many rational and efficient methods have been suggested to aid parents, in the discharge of those peculiar duties in which it is their happiness to engage. But from the anxious and devoted mother, is the inquiry still repeated ;—How shall I employ, interest, instruct, and govern my child, to make it intelligently good and happy ?—To answer this inquiry, in part, by presenting to the view of mothers, some of the very valuable suggestions contained in the pamphlet above mentioned, is the purpose of this article.

From no system of early education, are the results happier than from that of Pestalozzi. By an attentive study of the primary operations of the infant mind in acquiring, retaining, and expressing its ideas, this distinguished philosopher, obtained a knowledge of its nature so accurate, and devised such methods for the harmonious development of all its powers, as to be able to operate upon it himself, with certainty, and success. An observer of nature, by this was he taught to lead the infant mind onward in a regular and continuous progress towards truth and virtue ; and by its perceptions of the immortality of the one, and the beauty and loveliness of the other, to induce it to put forth its own volitions, and become the chief agent of its own advancement. It was by quickening and directing the activity of those influences, which the works of nature, and of provi-

* Mr. Holbrook, to whose exertions chiefly the Lyceum owes its origin.

dence, are constantly exerting upon the infant mind, and revealing its latent powers, that Pestalozzi looked for successful results. He did not substitute the influence of his own mind, for that of nature and providence, and thus pervert their sole purpose ; but availed himself of both. It was the reciprocal influence of internal and external nature upon which he relied. Instead of the mere copy of nature, as presented in books, he led his pupils to the volume of external nature, and in its broad and varied page, he traced the beauty and harmony, and symmetry of the characters there drawn by the pencil of its divine author. He loved nature himself ; and it was the perception of this truth, that awakened the same love in his pupil. They loved and studied nature together.

It was the great purpose of Pestalozzi, to inspire mothers with a just sense of their value in the scale of being ; and, by the simplicity of the manner in which he taught them to discharge their high duties, and the happiness inseparable from their performance, he hoped to induce them to lay early the only broad and sure foundation of virtue and happiness for their children.

‘It was his aim to excite in parents the desire to take advantage of the invaluable opportunities afforded in the DOMESTIC CIRCLE, for fostering the infant mind in the simple, pure, and artless way which nature has traced ; to inspire them with a sense of their duty ; and the widely extended and important consequences resulting from the neglect or fulfilment of this duty.’

There is no relation more sacred than the *maternal*. It is to the mother that the care of infancy is entrusted. Nature has constituted her its guardian, and involved the mother’s happiness in that of her infant. It is this maternal sympathy, that becomes the influence by which its nature is developed, and its primary education achieved. It is the invariable operation of this influence of kindness and love, that begins and continues the progress of its being.

Infant education commences with the very dawn of infant existence. At this early period, maternal care should be chiefly interested in securing the physical comfort and happiness of its sweet charge, by the invariable exercise of the kindest and tenderest offices of affection and love. The infant’s helplessness and innocence appeal in the strongest and most persuasive language for safety and protection to the mother’s heart. Her feelings will prompt her to attend to its numerous wants, and by the exercise of those charities, which the author of her na-

ture, has wisely fitted her to confer, to anticipate, supply, and relieve them. It is by these repeated acts of affection, that her infant becomes conscious of the existence of the benevolent being, from whom its happiness is derived. The sweet fountain from which it draws nutrition, the soft bosom on which it reposes, from whose embrace it awakes to meet the eye of maternal fondness, and the caress of maternal love, awaken in its breast the feelings of conscious affection; and denote the commencement of its *moral* life. As an agent of the divine instructor, the mother will feel herself entrusted with a spirit, destined for immortality, on which she is urged, by every consideration, to shed that redeeming influence, which alone can preserve it from earthly pollution, and conduct it to the skies.

Her infant, now in paradise, she will endeavour to sustain there, by removing forbidden fruit from its view. By methods suggested by its nature, she will develop the affections of its heart, and direct them in the attainment of good. Herself, she will regard as the primary object, to which its young affections should most fondly cling; she will adhere to the indications of nature; knowing that on this depends the reality of her hopes, that they are the voice of the divine instructor, whose friendly monitions, are thus given to aid her in her good work.

Having obtained by the influence of love and kindness, the whole affection and confidence of her infant, she has put herself in possession of a power over its volitions, that will ensure its ready obedience. She will win to obedience by this influence. Her requirements will be few and simple: they will be mere modifications of nature's. In case of transgression, it points to the resulting unhappiness, and teaches, by experience, the inseparable connexion between disobedience and misery, between obedience and happiness. Appealing to the standard which she erects for the guidance of its actions, she creates the round of its duties, and the perceptive conscience which approves them; adherence to its dictates soon makes them habitual; the will becomes rational, and leads to the cheerful and happy performance of duty. Fear and coercion she keeps out of sight.

The mother will early fix, by experience, the great moral rule in its mind: she will lead it to see that the only way to secure its own happiness, is by promoting the happiness of others—of all around it that lives, and moves, and breathes. It is by the perception of this truth, that her young philanthropist will feel the pleasures of a moral existence.

To nature she will turn its attention ; and from the variety and beauty of *her* productions, she will fill its mind with thought. She will address, in succession, all the faculties of its being.

Alive to every surrounding object ; conscious of its innocence ; enjoying, and returning the affections of all with whom it dwells, her infant's mind, in due time, recognizes a higher power, which it feels is good. To this power it extends its affections, and rejoices in being the recipient of its love. Religious feeling rises in its breast, and sheds a kindly influence on all its pursuits. Assured that God is ever present ; that in him it lives and moves and has its being, the feelings of reverence, and gratitude, and devotion, and love, spontaneously rise in its breast, accompanied by a sense of the divine approbation, which lead to the constant, and cheerful, and conscientious performance of duty.

Without attempting to follow the course of arrangement, in the selection of thoughts, from the pamphlet which we have mentioned, we will, in this connexion, introduce some observations regarding the maternal duties, of which we have above attempted an outline.

‘For cultivating the *moral* principle, the mother must, 1st. Endeavour to excite in the heart of her child, *gratitude, faith, and love* ; and this will be easy, as every mother is possessed of the means. Maternal affection is the powerful spring by which she can put the child's heart into action, and give a just direction to all its internal feelings and applications.

2d. She must accustom her child from the earliest infancy to unconditional, prompt, and cheerful obedience.

3d. Let every mother, by practice, as well as by precept, endeavour to act so as always to present to him the moral law, by intuition ; a child has not only a quick *ear*, but a quicker *eye*, than we generally believe. No success can be expected in education, till we abandon a religion of words, and take up that of deeds ; till doing supersede talking ; till we have more practitioners than preachers.

‘The *moral* principle may be further strengthened, by giving children a habit of punctually fulfilling their daily duties ; thus teaching them the inestimable value of time ; of respecting other people's property, and particularly the property, however intrinsically trifling, of their young companions ; of kindly treating their infant brothers and sisters ; of voluntarily renouncing and denying themselves comforts and amusements, in order early to acquire a degree of self-command, of humility, and of christian affection, by accustoming them to reflection, and gradually training them to consider the *end* of every action : this habit will not only save them from many follies and errors, but will lead in time to a conscientious employment of every talent ; to that

“ Wisdom whose fruits are purity and peace.”

‘A child should not be left in the first period of its development to the action of its own will : its moral guardians, its parents, must guide

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‘When a child can pretty well pronounce words and short sentences, his mother chooses some object likely to interest him; shows him the whole of it; lets him try distinctly to repeat the name of it; then to analyze it, by simply naming all its essential properties, as form, colour, and weight. The object is handled, looked at in every direction, and if possible, his sense of hearing is exercised upon it. As the mental powers gain strength, all *particulars* of objects are denominated; and he is encouraged to repeat them, articulating distinctly every word. Whatever the mother imparts, should be in a cheerful, affectionate manner; and these little exercises will not fail to become a most agreeable occupation.

‘Exercises may also be given with small wooden cubes, oblongs, narrow slips of wood of different lengths, cones, squares, pyramids, or other figures.* The mother points out and denominates every thing respecting their form, superficies, angles; their length, breadth, and thickness; and encourages her child to endeavour by degrees to do the same. She afterwards alters the position of the figures, and asks what changes have been made. She produces by placing the figures together, different bodies, and asks what new forms have been produced. The child himself may be led to take pleasure in these attempts, and to give an account of what he has done.’

ART. VII.—*Geology for Schools.*

Few subjects have a stronger claim to a place in a system of popular education than geology. Numerous reasons urge its introduction into every school.

1. It is nearly allied to geography; and, like that, is calculated to enlarge the minds and extend the views of children, by acquainting them with the earth they inhabit. If it does not inform us of the situation and comparative size of continents, islands, and mountains, it teaches us what continents, islands, and mountains are composed of. If it takes no notice of cities, kingdoms, and empires upon the earth, or the changes which have been produced upon its surface, by the industry or the ravages of men, it describes the more sublime changes it has suffered, by the hand of time, and the agency of earthquakes and volcanoes. If it gives no history of the nations that have risen, and flourished, and fallen, upon the earth, it contains a history of the earth itself. It informs us what it was when it

* To aid those interested in the early education of children, a collection of apparatus, accompanied with a book, has recently been prepared by Mr. Josiah Holbrook, entitled ‘Easy Lessons in Geometry.’

was without form and void, what changes it suffered when the fountains of the great deep were broken up, or when other convulsions shook it to its centre.

2. It is an interesting science. It opens to our view a new world, and presents us with numerous objects of beauty and of interest, before unnoticed. The most barren ledges, the commonest rocks and walls by the wayside, destitute of anything to admire or notice, show to groups of young explorers, that these have not merited the long neglect they have suffered; that they contain much that is rich and beautiful, not merely when arranged on the shelves and cases of a cabinet, but when placed on the mantelpiece of the parlour or drawing-room, and furnishing instruction and delight to the most elevated minds.

3. It is among the grandest of the sciences. It leads us to view, with increased admiration, the towering mountain and awful precipice, and induces and enables us to examine with greater ardour, and more exalted delight, those features of the earth, which never fail to excite ideas of sublimity even in the rudest mind. We learn from it, that amid the lofty aspect, the terrific grandeur, and the wild confusion of the Alps and Andes, there is order and regularity, which evince the skill of a wise and all-powerful architect. Arrangement amidst apparent disorder, a vast storehouse of riches overhung by forms of terror, objects of the highest beauty grouped beneath the awfully sublime, afford to the passing geologist a moral as well as an intellectual banquet.

4. It gives new interest and increased utility to our journies and our walks. A person, with the slightest knowledge of geology, never passes from one country or place to another, without finding much to admire, and much to increase his store of knowledge. If he finds no thriving village, no field covered with the fruits of the farmer's industry, no fertile tract groaning under its load of stately forest trees, or smiling beneath its dress of beautiful verdure, he still finds in the barren plain or the broken ledge, much that is beautiful, rich, and instructive.

5. It furnishes a healthful and instructive amusement to the young. Wherever it has been introduced into schools, the pupils have taken more or less of their pastime in examining and collecting specimens of minerals within their reach. A geological excursion is uniformly preferred by them to their ordinary sports, too often calculated to dissipate their minds, and unfit them for patient and successful application, when they return to their school rooms or their books.

6. It teaches children to be observing. A thousand objects before unnoticed press upon their view ; their imagination and taste are awakened, and called into vigorous and healthful exercise in discriminating the aspects of objects. Their minds once put upon the search to discover what is beautiful and rich in the mineral kingdom, are led to examine other parts of this wide creation ; and wherever they go, or whatever they see, they find something to admire, and to convey to their minds, entertainment and instruction.

7. It leads to useful discoveries. Wherever the science of geology has been introduced into schools, or to the attention of other young people, valuable discoveries have been made to enrich the treasures of science, or to furnish new sources of industry and of wealth, both to individuals and the nation. If once introduced into all our schools, the whole country would be put under the most minute and rigid examination, and compelled to yield up its treasures, now buried beneath the surface of the earth. In New-England, alone, from one to two hundred thousand, young, but ardent and efficient surveyors might be induced to afford their gratuitous and cheerful services, to explore our resources in the mineral kingdom ; and while they amused and instructed themselves, they would make important accessions to the public treasures of science and of wealth.

8. As the adoption of geology as a branch of common education uniformly leads to a thorough examination of the natural features of the country, it would prepare the way for obtaining maps of all the towns where it should be introduced. Considering the trifling expense at which lithographic prints of town maps can be procured, and the important vehicles they would be to convey a minute and accurate knowledge of the character and resources of our country to the minds of its inhabitants, few subjects better deserve the immediate attention of every town.*

9. No science is more practical. It acquaints farmers with the nature of their soils, and the best methods of improving them : civil engineers with the materials for constructing roads, canals, railways, wharfs, dams, &c., and the proper method of combining them : artists with the origin and nature of paints, and other substances in common use, and the miner when and

* Mr. Pendleton, of Boston, offers to execute lithographic prints of town maps at a very moderate price, after manuscript drafts are furnished for the purpose. We mention this fact as particularly important to Lyceums.

how to extend his researches, pointing him to a reward for his labours, and guarding him against abortive attempts.

Agriculture, internal improvements, manufactures, and the various useful arts, occupy, at present, so large a place in public attention, as to render every method which can be adopted to advance them worthy of public and private patronage.

10. The introduction of geology into schools, would tend to promote moral improvement among the young. Perhaps there are not two more unfortunate circumstances attending our system of popular education, than that the exercises of children in the school room are irksome, and those for recreation are dissipating to the mind. If school houses could be rendered places of pleasant resort, and amusements sources of useful instruction, the great work of reform in cultivating intellectual and moral taste would be fairly begun. The more innocent and useful amusements, are scattered around the young, the less time and disposition will there be to pursue those which are pernicious or useless. No subject, perhaps, is better fitted to answer the double purpose of amusement and instruction, than geology. And few are better fitted to show the power and wisdom of Him, 'who weighed the mountains in scales, and the hills in a balance.'

11. It is easily acquired. The features of this science are not only striking and grand, but they are few and simple, and exactly fitted to entertain and expand the juvenile mind. By the aid of specimens, with appropriate descriptions, its general principles are more easily and readily understood, than those of any other science which is taught. Nothing is more easy than to introduce it into every district and private school in the country; and to acquaint every child with the names, ingredients and uses, of the rocks he daily observes in his walks, and with the prominent geological features of our country.

12. It is necessary. Without it, gazetteers and journals of travels cannot be understood. In some places, a knowledge of the great geological features of the earth, is as common and familiar, as of the continents and oceans: and consequently, without this knowledge, a person is liable to find himself ignorant of the most common and familiar topics of conversation, in the society he will frequently meet. To be destitute of a branch of science so important and accessible is to be unprovided with a great source of mental occupation and entertainment for early life, and in the case of teachers, the want of it is the want of a powerful and happy means of influencing the youthful mind.

Few teachers perhaps are at present acquainted to any extent with this important department of knowledge. But none need long remain so, who are in the neighbourhood of a Lyceum. The farther extension of this useful institution will, it is to be hoped, offer opportunities to every instructor of acquiring at least a good knowledge of local geology.

ART. VIII.—*Apparatus for the Instruction of Children.*

THE eye is a most powerful and efficient inlet of knowledge. On many subjects, a mere glance of that organ will do more than a course of reading and study for weeks or even months. To young minds possessed of but few ideas to use for acquiring others, visible illustrations are indispensable. Without them, their progress in learning, will be merely collecting words without ideas. Nor can it be doubted, that wherever the nature of the case admits of it, representations to the eye ought to precede a description from the book or the teacher. As the uniform and distinguished success of infant schools has demonstrated the truth of these remarks, they are not presented in the form of theories; but of facts; and of course do not require words to prove them.

Although the importance of apparatus for the instruction of children, must appear manifest from a moment's reflection, and has been fully demonstrated by experiment, the sentiment still prevails too extensively that study is necessary before it can be used to advantage.

An erroneous sentiment obtains, not only in relation to apparatus for the use of children, but respecting the subjects most easy and natural for them to comprehend, and most useful for them to learn. The most unfortunate impression exists to a great extent, that the learning of letters, spelling, reading, writing, &c., are the most important, if not the only important subjects to occupy the attention of young children; and that the sciences, or the laws and works of nature, are above their comprehension, and not fitted for their use.

The order in which those subjects should be taught to children, whether considered in relation to their easiness of comprehension or their practical utility, most certainly ought to be

reversed. Every child, in his earliest infancy, is a natural philosopher. He experiences the most intense delight, in his endless and endlessly varied experiments to ascertain the nature or properties of objects around him, and of the laws which govern them. The whole circle of the sciences is examined and relished, to some extent, by children ; and the examination is commenced at a very early period. The experiments tried by them, in chemistry, mechanics, hydrostatics, pneumatics, optics, botany, mineralogy, &c., are innumerable, and all calculated to give them the knowledge which they most need, and which they constantly use in their daily pursuits in life.

If one science is commenced by infants earlier than any other, and more than any other, lies at the foundation of an intellectual and practical education, that science is *geometry*. It is evident that one of the first impressions made upon the mind of an infant, when he opens his eyes upon the light of heaven, is the shape or figure of objects around him. He commences the study of figure or geometry by the eye, and after a few weeks, brings to its aid, the hand. It is by seeing and feeling the various objects around us, that we learn their shape and are enabled to compare one with another. By this examination and comparison we learn the nature and properties of all figures; both of surfaces and solids and the relations that exist between them. The properties and relations of figures are nothing more nor less than the science of geometry.

Although children commence almost with their existence, the study of geometry, chemistry, natural philosophy, and almost the whole circle of the natural sciences, and pursue them with the greatest ardour and delight, and greatly to their advantage in their future avocations, (whatever these may be,)—both the delight and the advantage of these studies might be greatly aided by facilities which parents and teachers can put into their hands. It adds much to the pleasure and the practical utility to be derived from the natural sciences, to have the elementary principles clearly and familiarly understood. To understand the properties and relations of different shaped surfaces and solids, diagrams and models of solids are exceedingly desirable if not indispensable. The nature of circles, squares, triangles, spheres, cubes, cylinders, pyramids, cones, &c., and their resemblances and differences, will be better understood by a mere glance of the eye on the things themselves, than could be done by descriptions, however accurate, and however long continued. If these views are correct, a set of geometrical diagrams and

solids must be a valuable part of the furniture of every nursery and school room.

A small globe, merely to show the shape, motions, and a few of the great divisions of the earth, a simple representation of the solar system, a few cheap and simple articles to illustrate some of the most interesting and important principles of chemistry and natural philosophy, specimens in geology, sufficient to explain the rocks children pass in going to and from school, slips of the principal American forest trees, representing the bark, wood, and leaf, with a description and explanation given of each in a small tract, would be valuable appendages to a school room.

That these subjects would be interesting to children, and wholly within their comprehension, is triumphantly proved in infant schools, as well as by the course voluntarily and ardently taken by almost every child in his little, but ceaseless and healthful enterprizes of sport and mischief, as soon as he gains the power of locomotion. The whole of this will be explained, when the fact, too seldom realized, is understood, that almost every principle of science when divested of verbiage and technicalities, and presented in its native character, is remarkable for its simplicity, and its fitness to interest as well as to enlarge the minds of children. Surely a child need not be very old, to learn that if an iron rod is put into the fire it will be made longer, or after seeing a few experiments, to understand the general proposition that heat enlarges bodies.

It does not require great maturity of intellect to learn the fact, that glass is more brittle than lead, that gold may be beaten into thinner leaves than iron, or that iron is stronger and more apt to rust than gold; yet these facts all belong to the science of chemistry, and are fitted to amuse and instruct children, and put them in possession of knowledge which they will have occasion to use in almost every pursuit in life.

If any person will inquire for a moment through what organ impressions are made upon the minds of children, most rapidly, distinctly, permanently, and agreeably, what kind of knowledge they are in infancy most eager to obtain, and what they have the most frequent and important occasions to use in the daily and ordinary pursuits of life, he must be ready to acknowledge that apparatus, and specimens to explain the laws and the works of creation, are an essential appendage to every school room and every nursery.

INTELLIGENCE.

Massachusetts Charitable Mechanic Association.

THIS institution is probably well known to many of our readers, as one distinguished for its beneficence, as well as its standing and respectability. In addition to its other objects, its influence has been recently extended to the diffusion of scientific knowledge among its members, by the establishment of lectures, resembling those usually given at the mechanics' institutes abroad, and in our own country. The peculiar facilities which this society can command for carrying such objects into effect, it is unnecessary to enumerate to those of our readers who are acquainted with its character. To others, the information may be sufficient that it embodies, perhaps, the largest number of well informed mechanics, that have yet been associated in this country, for the promotion of objects of benevolence or of science; and has, from its commencement, ranked among its members, individuals whose names are extensively known in connexion with the best interests of the community.

The measures adopted by this association, for the purpose of furnishing scientific instruction, have identified its objects with the great interests of education. In this view, it becomes a source of intelligence on the subject to which our journal is devoted; and a brief account of its origin and design would seem likely to form an article of instructive and interesting information to our readers.

The Association was instituted in the year 1795, for mutual aid in the advancement of the mechanic arts, by 'promoting mutual good offices and fellowship, assisting the necessitous, encouraging the ingenious, and rewarding fidelity.' The institution is styled the 'Massachusetts Charitable Mechanic Association.' It is restricted, in the admission of members, to persons who are mechanics and manufacturers, with the exception of individuals admitted as honorary members. 'The government of the association superintend its general interests, and, in particular, its prudential concerns: they are empowered to correspond, when it is deemed expedient, with similar associations in other places: they have power to grant such sums to indigent members, their widows or orphans, as they shall think proper,—not exceeding twenty dollars in any one instance.' A 'committee of relief' is chosen by nomination, annually, whose duty it is 'to seek out and relieve such indigent members of the association or their families, as may be proper objects of charity,'—for which purposes a liberal sum is annually entrusted to the committee of relief. 'Beneficence is a primary and conspicuous object of the association: its funds are considered as chiefly devoted to the relief of the distressed. On the death of a member, the committee of relief shall immediately order the sum of forty dollars to be presented to the widow, family, or legal representative; but when there is no widow, family, or legal representative, the money shall be appropriated to defray the funeral expenses.'

'As it is compatible with the act of incorporation and the good of society, the association may, from time to time, when the state of its

finances will warrant, grant such premiums for superior workmanship in the respective arts it embraces, as the government shall deem most expedient.*

'The fee for ordinary membership is ten dollars, the quarter-yearly assessment on each member is fifty cents.'

Among the general regulations is the following, the influence of which is felt to be excellent on the character and habits of youth.

'To reward industry, sober habits, and fidelity, the association decrees, that when an apprentice, on arriving at twenty one years of age, shall produce a certificate from the person with whom he hath served his apprenticeship, that he has behaved with fidelity and attention, and has not violated any agreement made by him, it shall be the duty of the government to direct, that he be furnished with a certificate, sealed with the seal of the association, signed by the president and vice president, and attested by the secretary.'

From the date of its institution this association has continued a distinguished organ of beneficence; and through its influence on those for whose benefit it is designed, has contributed, in no slight degree, to the general good of the community. The impulse given, of late years, to the mental advancement of the industrious classes, by the establishment of practical lectures and other means of instruction, has been extensively felt in the United States, as well as in Europe. The objects of the Massachusetts Mechanic Association were very justly deemed by its members to be such as accorded with the general efforts of the day, for the wide diffusion of scientific knowledge. An act of the legislature, (February, 1821,) was accordingly obtained, by which the association is empowered to hold 'personal and real estate, to the amount of one hundred thousand dollars,'† and to 'establish schools and libraries for the use of apprentices and the improvement of the arts.'

In the present condition of the association there are three prominent objects of general interest. These are its *library*, the *evening school* for apprentices, and the *public lectures*.

The *library* owned by the association contains from twelve to fifteen hundred miscellaneous volumes. It owes its origin to a number of liberal individuals, who presented it to the institution 'for the use of mechanic apprentices in the city generally.' In 1821, a donation to the library by Sir Isaac Coffin, was received through the mayor, Mr. Quincy. It is a circumstance not unworthy of notice, that the library has been for some time entrusted to the keeping of the apprentices themselves, who manage it by a committee elected for the purpose, and responsible to a superintending committee of the association. The library is open to all apprentices in the city and vicinity, without charge, and without any other restriction than those usually found necessary for similar purposes among adults.

The *school for apprentices* is an important and comparatively a recent addition to the society's means of usefulness. In some instances, the opportunity thus afforded to the young is invaluable. The public schools of the city provide adequate elementary instruction for the children of its inhabitants. But not a few of the youth who are employed as

* It is perhaps to be regretted that, of late years, this laudable object has failed to attract the attention of the association, in a definite way.

† The present amount of the funds, is upwards of \$14,000.

prentices in the city, are natives of other places; and of these some have received but little advantages of tuition. To lads in this situation, the evening school opens every prospect which can be offered as an inducement to industry in the acquisition of intelligence as well as of manual skill. To this school every member of the association may introduce his apprentices, if over seventeen years of age. The branches taught are such as seem likely to be most useful to persons engaged in active business. The number of pupils is at present upwards of fifty; the attendance, however, is necessarily more liable to interruptions than is the case in regular day schools. It is interesting to contemplate these exertions for cultivating the minds and elevating the character of those, who, it is natural to expect, may, in due season, become themselves members of the Association, and dispensers of its benefits in their turn.

About the commencement of last year, arrangements were made for establishing a course of *lectures*, to be delivered weekly, at the expense of the association; each member to be entitled to two tickets of admission. The plan of the lectures for the present season was extended, so as to admit of a part of the lectures being delivered by members of the association. The introductory lectures of the course for this winter, were on subjects connected with chemistry, and were delivered by Dr. Gay.* The first lecture by a member of the association, was given by Mr. William Jackson, on the subject of rail roads, and subsequently repeated before the members of the legislature. It has since been published. In addition to these, two lectures have been delivered by Dr. Bradford on physiological subjects.

The lectures have, thus far, proved highly interesting and instructive; and should they be rendered accessible to apprentices of a proper age, (perhaps in the form of a reward for punctuality and diligence at the evening school,) the sphere of their usefulness would be beneficially extended.

A triennial festival is held by the Association in the month of October, at which a public address on topics connected with the objects of the institution is delivered by one of the members. These discourses have all been successively printed for the use of the Association; and most of them present very interesting views of the progress of the useful arts.

The officers of the Association are chosen annually in January. The following list was compiled from the last election.

President, Samuel T. Armstrong; *Vice President*, George W. Otis; *Treasurer*, John Cotton; *Secretary*, Joseph Lewis; *Trustees*, Seth Thaxter, Ezra Dyer, J. T. Buckingham, Abraham Call, Jacob Todd, Benjamin Loring, James Mc Allister, Edward D. Clark, John Khun, George W. Otis, Daniel Messinger, Isaac Harris, Simon Wilkinson; *Committee of Relief*, Frederick Lane, Charles Wells, James Brown, David Francis, John Wells.

We are happy to understand that since the arrangement for the establishment of lectures was carried into effect, there has been a large accession to the list of members. This circumstance is an additional proof of the great extent to which a desire for scientific information prevails in the community. It is a favourable indication, also, of the con-

* Of these, one is contained in our present No.—*Ed.*

tinued prosperity and usefulness of the Association. We cannot doubt, however, that there are still very many of the mechanics of Boston and its vicinity, who have not yet availed themselves of the privilege of joining this institution, as members, and affording their apprentices the advantages of the library and the school. If the imperfect sketch now given of the design and character of the Association, should attract the attention of any to its excellent objects, it will have accomplished a valuable purpose.

Those of our readers to whom this article may have been less interesting, will not be dissatisfied with the length to which it has been extended, when they advert to the fact, that hitherto there has been no full account of its subject, before the community.

Carbon.

[To render the Journal useful to Lyceums, it is intended that each number should contain one or more treatises or discourses, on subjects intelligible and interesting to all classes of readers, and at the same time adapted to the objects of the lectures and conversation, which form a part of the exercises usually adopted at the meetings of a Lyceum. In addition to the discourse of Mr. Johnson, the subject now introduced will, we hope, be found generally instructive, as well as directly applicable to practical purposes. The article which follows, formed the substance of one of the lectures delivered, this season, by Dr Gay, to the Massachusetts Mechanic Association. Our readers will of course receive it, not as a full, systematic treatise on its subject, but as a familiar discourse, presenting useful information in a popular form. With this view of its character the author has, at our request, obligingly yielded it for publication in our pages.]

CARBON is one of the simple or elementary substances. Where this substance is not combined with any other, it exists in a solid state. It is a principal ingredient in all vegetable matter; and it is familiar to us as coal or charcoal. If we set fire to a piece of wood, it burns for some time with a flame. After a time, however, the flame disappears, and there remains nothing but a black substance, which we call coal: this coal is carbon, almost in a state of purity. The explanation of this phenomenon is this: a piece of wood is composed of carbon, or charcoal, and several other ingredients; and when we set fire to it, the heat of the wood, while burning, converts these other solid substances of which the wood is composed, to a gaseous or aeriform state; these pass off in this form, in the same way as when we heat a quantity of water so as to make it boil, it will pass off in the form of steam. All the parts of the wood, then, that can be made to assume the gaseous or aeriform state, by means of heat alone, are driven off in this form; while the coal which cannot be made to assume the gaseous state by the heat alone, remains solid. I shall explain to you presently

the manner in which the coal itself may be made to assume the form of a gas.

The common charcoal that we use for fuel, is prepared by piling together a quantity of wood in the form of a pyramid, and covering it with turf, clay, or earth, leaving a few air holes; the wood is then set on fire; and as soon as the whole of it is kindled, the air holes are stopped up. In this process the covering of clay or turf prevents the combustion of the coal, while the other parts of the wood are burnt or driven off in a gaseous state.

Charcoal obtained in this manner is not perfectly pure carbon: it contains a very small quantity of earthly or alkaline substances, and an exceedingly small quantity of hydrogen. Almost the whole of the coal, therefore, is carbon.

Another form of carbon, in common use, is lamp black. The principal difference between this substance and charcoal is, that the lamp black is in the form of an impalpable powder, and some kinds of it contain a less proportion of impurities than charcoal: a lamp black prepared carefully from turpentine may be burnt without leaving any ashes, which form the principal part of the impurities of coal. There is one other substance which, from the most accurate experiments, is found to be pure carbon; this substance is the diamond; and I shall presently mention to you the experiment by which this fact is proved.

Charcoal is a very bad conductor of heat. One end of a piece of it, an inch long, may be held between the fingers, while the other end is burning. It may, therefore, be advantageously used for several purposes connected with household economy. A double box, for instance, may be constructed that would preserve ice for a long time in our common cellars, in the summer. This may be done by taking two boxes, one much larger than the other in every direction; the smaller one is to be filled with ice, and is to be placed inside of the larger one; the vacant space between the two boxes, is then to be filled with powdered charcoal. The charcoal is so bad a conductor of heat, that only small quantity of heat will pass through it to the ice in the smaller box.

Charcoal possesses the property of depriving bodies of their odour, taste, and colour. This property, in some cases, is a valuable one. The vinegar that is used in medical preparations, is purified by putting into it a quantity of newly burnt charcoal, and heating it. When water has become putrid by long standing in casks, it may be deprived of its putridity, by being filtered through charcoal powder. In long voyages, the water will often become putrid. In these cases, it is sometimes made good by putting a quantity of charcoal in the cask of water, and agitating it. The method, however, that is usually practised, is a better one; the inside of the cask is burnt to a coal, by which the putridity of the water is prevented. Even meat which has become somewhat putrid may be deprived, in a great measure of its bad odour and taste, by rubbing it with charcoal powder, and imbedding it in the powder.

Charcoal possesses the power of absorbing a certain quantity of the different kinds of gas: a piece of charcoal made from boxwood and newly burnt, will absorb and condense into its own substance, nearly twice its bulk of hydrogen gas, about nine times its bulk of oxygen gas, and about twenty times its bulk of gaseous ammonia. These gases may be driven off from the charcoal, by heating it. Charcoal,

when exposed to the air, will also absorb a considerable portion of the moisture that the air always contains. It appears that the purifying power of charcoal depends, in some measure, upon this property of absorbing the different gases, and possibly somewhat upon that of absorbing moisture; for it is found that a piece of charcoal that has been exposed to the atmosphere, does not possess this antiseptic property in nearly so great a degree as a piece newly burnt. The reason is, that the charcoal that has been exposed, has absorbed a certain quantity of the gases of which the air is composed, and hence loses in some measure, the power of absorbing more of the gases that may arise from the substance which is to be preserved.

Carbon has a strong attraction for oxygen, and it unites with it to form a gas: this gas has the properties of an acid and is called carbonic acid gas. To produce this combination of charcoal, or carbon and oxygen, it is only necessary to set it on fire. I explained to you, in a previous lecture, that the atmosphere is composed of oxygen and nitrogen gases: and when we set fire to a piece of coal, almost the whole of it gradually unites with the oxygen of the atmosphere; and while this union is going on, light and heat are given out by the coal, and probably by the oxygen also. In other words, the coal burns, so that we lose sight of the whole of it, with the exception of the small quantity of ashes that remains. The coal, therefore, by being burnt, is not destroyed, as we have not the power of destroying any kind of matter: it merely changes its form, and from a solid substance it becomes a gaseous or aeriform one. You have probably observed that when salt is put into a tumbler, and water poured upon it, the salt will gradually disappear. In this case, the salt is not lost, but is dissolved in the water. It is in a manner somewhat like this, that a piece of coal, after it is set on the fire, becomes dissolved in the oxygen gas of the atmosphere, and unites strongly with it. If a piece of coal be set on fire, and introduced into a jar of oxygen gas, it will burn with much greater brilliancy than in the atmosphere. The experiment by which it is proved that the diamond is nothing but pure carbon, is its combustion. When the diamond is heated to a red heat, and introduced into a jar of oxygen gas, it burns; that is, it unites with the oxygen; and by their union there is produced nothing but pure carbonic acid gas. The diamond, a piece of charcoal, and lamp black, are, then, the same substance, excepting that there is added to the two latter an exceedingly small quantity of other substances. The principal difference between them is, that the carbon in the two latter is in the form of a black opaque substance, while in the diamond it is crystallized so as to form the hardest substance known, and the most brilliant of the precious stones.

Carbonic acid is colourless like our atmosphere; and when contained in a bottle, we cannot see it any more than if the bottle were filled with common air. It is one of the weakest of the acids; but it is at the same time one of the most important. You were informed in a previous lecture, that one of the properties, by which many of the acids may be known, is that of converting the blue colour that may be obtained from some vegetables, to a red; this property is possessed by carbonic acid. We can obtain a blue liquid by boiling in water some leaves of the blue cabbage; if a small quantity of this blue liquid be poured into a glass vessel of this gas, and then agitated, the liquid

will become red. Although carbonic acid exists in a gaseous form, when uncombined, it may be made to assume a solid form by uniting it with some other substance. Chalk, marble, and limestone are all composed of carbonic acid united to lime. A hundred parts by weight of these substances, contain usually about forty four parts of carbonic acid; and the remaining fifty six parts are principally lime with small portions of other ingredients. It may be shown by an experiment that carbonic acid becomes solid, while uniting with lime. Let a small piece of quick lime be put into a glass vessel, containing water: the water will dissolve a small portion of the lime. We must now take a bladder containing carbonic acid gas, with a pipe stem inserted into its neck, and dip the end of the pipe stem into the solution of lime in the water. By squeezing the bladder, the gas will bubble from the end of the pipe stem, through the solution; and as it passes through it, it will combine with a portion of the lime, that was dissolved in the water. The combination of lime and carbonic acid thus formed, is almost insoluble in the water; and it therefore falls to the bottom of the vessel. As it is in the form of very light powder, however, it will remain suspended for some time in the water, giving it a cloudy appearance.

There are other acids that have a stronger attraction for lime than carbonic acid has; the attraction between lime and sulphurous acid is stronger than that between carbonic acid and lime. If, therefore, we pour upon a piece of chalk some sulphuric acid, it will unite with the lime which is one ingredient of the chalk; and the carbonic acid will be set free from its combination with the lime; and being left alone, it assumes the state of a gas, and passes off in that state. It is well to put a little water on the chalk, before pouring on the acid; and then the gas may be perceived bubbling up through the water.

The following is the best method of procuring carbonic acid gas for chemical experiments. A piece of chalk or marble, half the size of a small apple, is to be broken into small pieces, and put into a retort; and half a wine glass of sulphuric acid, (oil of vitriol,) diluted with its bulk of water, is to be poured upon it. The carbonic acid gas will be copiously disengaged, and may be collected in receivers over water. The chemical name for marble, chalk, and limestone, is carbonate of lime.

Carbonic acid is formed in caverns, mines, and in deep wells: it is called by the miners, choke-damp: the common name for this gas is fixed air.

If a candle or any other common combustible substance be lighted, and introduced into a jar of carbonic acid gas, it will be extinguished.

Carbonic acid gas is much heavier than common air. If, therefore, a jar of it be held with its mouth downward for a few seconds, the gas will all fall out of the jar, because it is heavier than the common air; while if the jar be held with its mouth upward, the gas will remain in it for some time. It will, however, gradually mix with the common air, and at last all escape. This gas, from its weight, may be poured from one vessel into another, if a piece of lighted candle be placed at the bottom of a jar or tumbler, and some of the gas be poured from another jar the flame of the candle will be extinguished. When this gas is found in vats or deep wells, there is usually the greatest quantity of it near the bottom of the vat or well, and persons are sometimes in

danger of losing their lives by descending into them. As a candle will not burn where this gas has taken the place of the common air, and we can test its presence by lowering a candle into the well, if there be so much of the gas present, that the candle is extinguished, it would not be safe for any one to venture into the well or vat.

It is well known that persons have frequently lost their lives by remaining in a room where charcoal was burning. The reason of this is, that almost the whole of the oxygen of the atmosphere unites with the charcoal or carbon, and forms by this union, carbonic acid gas. You were informed in a previous lecture that the only gas upon which we could live for any length of time was oxygen gas, diluted as it is in our atmosphere, with a large bulk of nitrogen gas. There is to be sure, oxygen gas in the carbonic acid gas; but the oxygen gas in this state is strongly united with a portion of carbon; and in this state, it will not yield any more support to our breathing, than water would, if we were immersed in it. I have found that in some places, there is an opinion quite prevalent, that there is not any danger in remaining in a room where there is a pan of coals burning that have been taken from a common wood fire. This is a mistake: the coals from a common wood fire are exactly the same substance as the charcoal; and equal quantities by weight of these coals and of charcoal, will produce exactly equal quantities of carbonic acid gas. It is also by some persons supposed, that after charcoal has been burning for some time in a fire-place, there is a deleterious quality that gets burnt out of it, and that then it may be burned in a close room without danger. It is scarcely necessary for me to say that this is also an error.

The Lehigh and Schuylkill coals are composed of carbon united to a portion of some earthy substances; and in the burning of these coals, that is in the uniting of the carbon which they contain, with the oxygen of the atmosphere, there is carbonic acid produced, and of course there would be danger in burning these in a close room, as well as in burning charcoal. This would be the case also, in burning cannel and other bituminous coals; as their principal ingredient is carbon.

Carbonic acid gas, unlike the gases of our atmosphere, has a pungent and agreeable taste. If a quantity of this gas be condensed upon the surface of some water, the water will absorb it, and will acquire a pungent taste, which is derived wholly from the carbonic acid. The pungency of soda water is derived from this acid. To prepare this beverage, a very small quantity of carbonate of soda is put into water contained in a strong cask, and there is then crowded into the cask a large quantity of carbonic acid gas, which becomes absorbed by the water, and which then constitutes our common soda water. The object in dissolving in the water the small quantity of soda, is, to induce the water to absorb much more of the carbonic acid, than it otherwise would. As soon as any of this soda water is drawn off from the cask, there escapes from it a considerable quantity of air; this air or gas is carbonic acid; and it is evident that the pungency of the soda is derived from the acid, because if the liquid be exposed to the air, almost all the carbonic acid will escape from the water, and it will lose its sharp taste. Beer, cider, and Champagne wine, when kept in bottles, contain a quantity of this acid, which escapes when the liquid is poured into a tumbler. The pungent taste of these liquids also depends upon this acid; as agitating them favours the

escape of the carbonic acid, they should be poured carefully from the bottle, without raising its neck from the tumbler.

Carbon has also a strong attraction for hydrogen, and it unites with it in two different proportions to form two gases.

The compound of carbon and hydrogen in which there is the smallest quantity of carbon, is called subcarburetted hydrogen. This gas is combustible, and it burns with a yellow flame, like that of a candle; it is destitute of colour, taste, and odour. This gas may be procured from the muddy bottoms of ditches and pools; to collect this gas we must hold a wide mouthed vessel with its mouth downward, in the ditch water, being careful that the vessel is filled with the water, before it is inverted. If the bottom of the ditch below the vessel be stirred with a stick, a quantity of air bubbles will arise into the vessel and displace the water. The air thus collected will be found to be carburetted hydrogen, mixed with a portion of some other kinds of gas; and if a lighted taper be applied to it, it will take fire. If from six to twelve parts of common air be mixed with one of this gas, and the mixture be set on fire, it will explode. Subcarburetted hydrogen is frequently generated in coal mines, and becoming mixed with the common air of the mine, explosive mixtures are formed. In the extensive coal mines in England, very large quantities of these explosive mixtures are frequently produced. A few years ago, these mixtures would take fire by the lamps used by the miners, producing the most tremendous explosions, and destroying the lives of many of the workmen. There was an explosion in one of the Newcastle collieries, by which one hundred and one persons perished in an instant. There has been discovered, however, an expedient that prevents these dreadful calamities. The remedy consists in nothing more than a cylinder of wire gauze, fastened upon the upper part of the lamp, which the workmen are obliged to use. This round cage or cylinder of wire gauze, is about one inch and a half in diameter, and six in length, and is fastened by means of a screw to the upper part of the lamp, so as to surround the flame; and all the air which feeds the flame of the lamp must pass through the apertures. The lamp thus guarded, may be used with perfect safety, in the most dangerous explosive mixtures, where the naked flame of a lamp would produce an instant explosion. The explosive mixture passes through the apertures to the inside of the cage; it burns in the cage; and the flame will sometimes come in contact with the inside of the gauze; yet there is not any danger of its passing through the apertures, so as to set fire to the gas on the outside, and produce an explosion. This lamp was the discovery of Sir Humphrey Davy; and it was the result of a long investigation of the laws and nature of flame.

The other gas resulting from the combination of carbon and hydrogen, contains twice as much carbon as the one first mentioned, and is called carburetted hydrogen. This gas is colourless like our atmosphere, and it burns with a brilliant white flame. The gas that has been so much used for several years past, for lighting large towns and cities, is a mixture of the two gases just described; they are procured from coal or oil. To prepare these gases, an iron retort is heated to redness, and then the coal or oil is put into it. If oil be used, it is suffered to run into the red hot retort only in very small streams. The gas from oil contains a larger proportion of the carburetted hydrogen, than the coal gas; and as carburetted hydrogen burns with a much

more brilliant flame, than the subcarburetted hydrogen, the oil gas will burn with a brighter flame, than the same quantity of coal gas. The flames from burning wood, oil, or coal, are all of them the flames of one of these gases, or more probably in most, the flame of the two gases, the carburetted and subcarburetted mixed in different proportions.

Account of a Visit to an Elementary School.

[Theory is most clearly seen, and is best understood, when embodied in practice. It thus becomes also most instructive and useful. Occasional articles, therefore, of the kind now presented, will, it is thought, prove serviceable to those who are engaged in the office of instruction.]

When we entered the school room, the children were eating their luncheon, and the teacher was standing in the midst.

'Have you any apples to divide?' he was asking; upon which three or four little hands were extended with an apple in each. He took them, and while he was cutting them, asked if there was any other word which they could think of besides 'dividing' that meant the same thing. Some said 'separating,' some 'distributing,' and some 'giving away.'* After he had dispensed all the apples but one, he asked them how many were willing that he should have all that one himself.

Every voice shouted '*I*,' simultaneously. Then he went up to one of the children, and asked him whether he wanted all the apple he held in his hand, or had rather it should be divided among the rest. 'I want it all,'—replied the little boy. 'Why?' 'Because I do. 'But this is no reason at all.' 'Are you generous, when you want it all?' 'No—stingy! selfish!' exclaimed several. 'Well,' said the little boy, seeing the tide against him, 'give me half, and divide the other half among the rest.' 'Oh, but why should you have so much more than the rest?' asked the teacher. 'Because'—'Because, he is selfish,' said one of the rest.

The little claimant at last consented that all, and he among the rest, should have an equal share. After they had finished eating, the teacher told them he would read them a story, if they would like to hear one. They all held up their hands in token of assent, and entreated him to read about Peter Parley. So he took up the book, and began, first telling them what the name, Parley, meant, and asking the meaning of the difficult words as he went on. He asked them, in one instance, what 'miserable' meant? One said, 'not comfortable,' another 'poor,' and another pointed to the fire, (which was quite out,) and said, 'That is a miserable fire.' The teacher asked what 'violently' meant? 'Hard,' 'quick,' 'strong,' were some of the answers. But one of the children got down off his seat, and stamping with his foot, shouted in a loud voice, '*That is riolently!*' After a while, the teacher shut up the book, and they all exclaimed. 'Oh! *do finish the story.*' 'If you don't, you are a naughty man,' said one. 'Am I?' said the teacher, looking

*He made them spell these words.

at him with a smile. 'Oh! no—But do read some more.' By this time they had all got into confusion; and the teacher put the book upon his knee, and said, 'Why don't I go on?' 'Because we are all making such a noise,' they replied. He did not bid them be still, but waited patiently until they had brought themselves to order, and then read on. When he had finished, he told them he was very glad they had *governed themselves*. When he sent them to their seats, he bid each one remember not to talk; then he gave them their slates, and wrote on the black board: 'Day' 'this' 'is' 'cloudy' 'a'—and told them he was going to make a sentence out of these words. One or two of them read it off directly; he told the rest; and they all wrote it upon their slates.

Then, for variety of exercise, he drew a double circle with chalk, upon the floor, and some of the children began to hop round it, while the teacher kept time with a little bell. After this he went behind his table to hear them read, and they all stood round him. He found their places for them all, excepting one, who snatched the book out of his hand, and exclaimed that he could find the place himself. The teacher immediately gave it up. But after looking in vain, the child pushed the book towards the teacher, who returned it to him, reminding him that he had said he *knew* he could find it. The little fellow looked again, and again offered the book to the teacher. 'No,' said the teacher; 'you said you could find it yourself.' At last the child who stood next him, showed him the place; and, with the heavy cloud lifted from his face, he looked up, and exclaimed, 'I've found it, Sir.' 'I told him,' said the other. 'You should not have told him,' was all the teacher said, and the reading proceeded. I was struck very much with the teacher's judgment, in letting a fault punish itself so completely as it would have done, had not the help of the other child interfered.

When he sent them back to their seats, he supplied them all with picture books, telling them that if they asked for any more, what he had given them should be taken away. And I was struck too with the order and silence they kept, without any rule or command. He asked them 'why he wished them all to be still?' None replied; and so he answered himself, 'Because, if you all made a noise, we could not do anything.' 'Oh! no indeed!' they all responded. He asked them which was best, to govern themselves, or to be governed. They all said, 'To govern ourselves.' While some were reading to him, he bid the others paraphrase a sentence in their primers. When he called them up, one said he had not paraphrased, because he did not hear him say that he must. The teacher asked the rest if they heard, and they said 'Yes.' He then said to the boy, 'Did not you *really* hear me say you must write this?' 'No, Sir.' 'Tell me exactly—for there is One who knows whether you heard.' The boy still persisted that he did not. The teacher then turned to the rest, and said that if this boy did not say what was true once, they would never be able to believe him afterwards—'What if I should tell you to-day, to be sure and come here tomorrow at nine o'clock, and that I should certainly be here; and then you should come and find the door locked, and me not here, and so on a great many times? What should you begin to think I was?' 'A very wicked man,' said one. 'Certainly, so I should be; and you would never know what to do; and if everybody told falsehoods what a world it would be: we should not be able to do anything.' He said no more, but I suspect the lesson was understood by the offender.

After he had looked at the paraphrases of the others, he described words, and asked them to tell what they were ; such as this : 'What does that man do who goes about in the night, and looks all around to see whether everything is right—walks and walks about, looking this side and that?' They could not tell. 'What does the dog do, which stays by the house to prevent any thief from coming?' 'He guards!' 'Yes ; and there is another word.' After a while, one said, 'He watches.' 'That is it.' Then he described a thief ; and some said 'stealer ;' but at last they exclaimed 'thief.' He then sent them each after a certain number of blocks to count, and among them all they brought twenty. He made them tell how many ones, twos, fours, fives, and tens, there were in twenty ; and after they seemed to understand it thoroughly, they went to their seats, and we came away.

[Our readers have probably anticipated us, in regard to the object in view in the insertion of the preceding article. Elementary education needs, and is receiving, great improvement in an intellectual point of view. But little, comparatively, has been done for its moral renovation. Even infant schools are too generally taught on arbitrary and mechanical methods, which leave the mind little voluntary influence over itself, and but a small share in its own advancement. The understanding and the heart are made to receive impressions in a passive way, when they ought to be called into action. The little pupils are 'tutored' into obedience and intelligence, till they become little else than animated machines.]

The methods of instruction adopted in the school described above, have, it has probably been observed, a very different tendency : they cherish freedom and vigour of mind, with natural independence and individuality of character. The principles disclosed in this article, will, we hope, attract the particular attention of parents and teachers.]

Harvard University.—The Hon. JOSIAH QUINCY has been appointed President of this institution. Our readers, we doubt not, will be interested by the following statements relating to the college, which are abstracted, by the Salem Gazette, from the Annual Report of the University.

It appears by the Annual Report of Harvard University, which has just been printed, agreeably to a recent vote of the corporation, that the whole amount of the real and personal property of the University is \$381,682 57 ; the income arising from which, from August 1827 to August 1828, is \$21,605 21. The whole income of the University, arising from Term Bills, and including the above, is \$43,251 69. The expenses of the college, during the same time, were \$38,104 27.

The report presents a full and detailed statement of the number of Exercises and Lectures, each class attends, during the academic year, together with a particular account of all property belonging to the University, and the manner in which it is invested, the salary each officer receives, and every particular expenditure of the University.

The following is an official estimate of the expenses of a Student at

Harvard College for one year, as reduced by the Corporation after August 31, 1828.

For Instruction, Use of Library Lecture Rooms, Steward's	
Department, Rent, and Care of Rooms, - - -	90.00
Class Books delivered from the Library, - - -	20.00
Wood delivered from the Yard, allowing three cords to	
a Student, or six to a Room, - - - -	22.50
Board for forty two weeks, at \$1.75, - - - -	73.50
	<hr/>
	\$206.00

State of the College. The whole number of students at present connected with the University is 401, viz:—Seniors, 60; Juniors, 47; Sophomores, 69; Freshmen, 74; University Students, 5; Theological, 33; Medical, 84; Law, 6; Candidates for the Ministry, 17; Resident Graduates, 6.

The regulations now are such that any person of good moral character, can enjoy all the advantages offered by the institution, without becoming a candidate for a Degree. Such persons have the privilege of residing at the University for any length of time, of pursuing any one or more branches of study, and of attending such lectures as they may wish, without being required to pursue all the college studies. These are termed University Students.—*Christian Reg.*

American Lyceum.—This institution is, according to accounts recently received from various parts of Connecticut, New Hampshire, Vermont, and Maine, becoming extensively established in New-England. In the state of Massachusetts, its branches are numerous; and these are, in several instances, organized into general associations for towns and counties. On the 6th of February, a meeting of persons favourably disposed towards the Lyceum, was held in the Chamber of the House of Representatives. Several resolutions, calculated to promote the object of the meeting, were unanimously passed; and a committee was appointed, for the purpose of collecting information, and reporting on an early day of the next winter session of the legislature.

A plan for a Lyceum in Boston has also been matured; and measures are in progress for its establishment.

Primary Schools of Boston.—The last semiannual report of the standing committee, presents the following intelligence: Number of schools, 57,—scholars; 3436; viz. 1684 girls, 1752 boys. Average number of scholars in each school, 55. The monitorial method of teaching proves successful, and is gradually extending; larger and more wholesome rooms, seem to be still very generally needed; select juvenile libraries are attached to most of the schools; the discipline generally prevailing is mild yet effective.

Institution for the Blind.—At a meeting recently held in Boston, a committee was appointed to report measures for carrying this object into effect. The business is making speedy progress. An act of incorporation has been solicited, and, we believe, obtained, by a number of individuals associated for the promotion of this philanthropic object.

Deaf and Dumb.—A very interesting opportunity of becoming informed of the methods adopted in teaching pupils of this class, has been offered, this winter, to the members of the legislature of Massachusetts, and to the citizens of Boston, by the visit of Mr. Gallaudet. He was accompanied by two of the pupils of the Asylum at Hartford, who performed, under his superintendence and at his dictation, a number of exercises, in illustration of the system adopted at the Asylum—a system for the introduction of which, our country stands indebted chiefly to the talent and enterprise of Mr. Gallaudet. The extent and the minute exactness of the instruction imparted to these pupils, were surprising; and the methods of tuition, as exemplified in their performances, appeared to be of a character so strictly intellectual, so simple, and so practical, as to suggest many useful thoughts for the improvement of all elementary instruction; while the watchful attention, the docility, and prompt attention of the pupils, afforded an eloquent though silent lesson of improvement to the juvenile part of the spectators.

Education in New-York.—*Extracts from Gov. Van Buren's Message to the Legislature.* The Literature Fund is \$331,609 82; and its revenue for the present year, is estimated at \$21,074 48. The management of this fund, and the distribution of its income, are entrusted to the Regents of the University, under such restriction, however, as to make the incorporated academies, and seminaries other than colleges, subject to the visitation of the Regents, the exclusive objects of this munificent benefaction.

The productive capital of the Common School Fund, is about \$1,700,000. Although the revenue has not, in any past year, been quite sufficient to pay the appropriation of \$100,000, directed by law to be annually distributed to the common schools, it is believed that it will exceed that sum the present year.

The liberal endowments from time to time granted to our scientific and literary institutions, have added much to the character of the state, and reflected high honour on the enlightened councils under whose auspices they were made. Although sometimes improvident, and occasionally unsuccessful, their general results have been highly auspicious to the great cause they were meant to subserve, and afford the strongest encouragement to a faithful perseverance in the same wise and liberal policy.

Extracts from the Annual Report of Mr. A. C. Flagg, Secretary of State and Superintendent of Common Schools.—Returns have been received of the common schools from the commissioners of every town and city in the state. In former years it was not unusual to have fifteen or twenty towns delinquent. It is gratifying to notice this evidence of increased attention and punctuality on the part of those who are charged with the execution of the statute.

The forms for school returns which were published with the revised statutes, provide for reporting the amount paid in the several districts for teachers' wages, over and above the school monies apportioned to the districts. The returns which have been received are from various towns in 15 counties; and the sum thus ascertained, compared with the amount of public money paid to the same districts, affords a very fair test for ascertaining the proportion paid by the inhabitants of the

districts for tuition. Taking these returns as a test, it appears that \$336,643 have been paid for teachers' wages, besides the \$232,343 of public money apportioned to the districts; making a total amount paid the last year for tuition, in the common school districts of the state, of \$568,986.

During the year 1828, \$202,343 21 have been paid to the several school districts which have made reports: of this sum \$100,000 were paid from the state treasury, \$119,209 30 were raised by a tax upon the several towns in the state, and \$13,133 91 were derived from a local fund possessed by certain towns. The towns have raised by a voluntary tax \$19,209 30 cents, more than were required to entitle them to the public monies.

The amount distributed among the several district schools, exceeds that of the preceding year, by \$9,347 44.

From the abstracts of the reports from the several towns and counties, it will be seen that there are in the towns which have made returns, 8609 school districts, and consequently the like number of schools organized; and that returns have been received from 8164 of those districts.

It appears also that 311 new school districts have been formed during the year 1828, and that the number of districts which have made returns, exceeds that of the preceeding year by 358.

That there are in the districts from which reports have been received, 449,113 children between the ages of 5 and 15; and that in the common schools of the same districts 468,205 scholars have been taught during the year 1828—the general average of instruction having been about eight months. The number of children taught in the common schools of the state has increased 26,349 since the last annual report.

University of Virginia.—The following changes have taken place in this institution, since the date of our last intelligence Mr. Long having been appointed professor of Greek literature, in the London university, Dr. Gesner Harrison has been selected to fill the vacated chair. Professor Bonnycastle has been transferred from the department of natural philosophy, to that of mathematics; and Dr. R. N. Patterson of the University of Pennsylvania, has been appointed to the former, together with the charge of the observatory, for which a separate salary is assigned.

The number of students matriculated during the session is one hundred and thirty one.

New-Hampshire Literary Fund.—It will be seen, (says the Concord Register) by a reference to our legislative journal, that a distribution of the Literary Fund, which has been accumulating for 7 or 8 years, and now amounts to between fifty and sixty thousand dollars, has been determined on, by a large majority of the representatives of the people. This fund, by provision of law, (if the Senate and Executive concur, as they doubtless will, in the measure) is to be divided among the several towns in the State, according to the apportionment of the public taxes existing at the time of the distribution. The money is to be applied by the respective towns to the support of common schools, or other

purposes of education,* without releasing them from the obligation to raise the sums already provided for under existing laws. A penalty, of double the amount misapplied, is imposed upon any town that shall pervert any portion of the fund to a purpose not contemplated by the act. Provision is also made for the future distribution, annually in June, of all sums hereafter received by the Treasurer, under the act of June 29, 1821, creating the fund.

Literary Fund of Virginia.—The literary fund of Virginia actually available, amounts to \$1,200,856.

Reading Room for Ladies.—Preparations are making for opening an establishment of this kind in the city of Boston. Much benefit, we think, may result from this aid to mental cultivation and enjoyment. Many of the most agreeable and instructive productions of cotemporary literature, are presented through the medium of periodical publications, or in some of the scarcely less ephemeral forms of narrative writing. Few, perhaps, even of the studious among the male sex, think of introducing such works, to any considerable extent, into their private libraries. For reading of this description, it is customary for men to resort to a reading room. A similar opportunity for those of the female sex to whom their circumstances and taste render it desirable, would seem equally, if not more advantageous.

Extensive reading, however, is not the only benefit which may result from female associations for intellectual purposes; as the progress of the undertaking now mentioned will probably show. The ladies who have taken part in this useful enterprise will, we hope, prosecute it to whatever extent it may seem to them likely to prove beneficial. They will not, we trust, be deterred from their attempt by the influence of the ridicule which some *manly* censors have endeavoured to throw on it. The female sex are themselves the most competent judges of what are the intellectual aids which their condition requires.

* Taking for a test, the experience of the state of Connecticut, in regard to a school fund, the abovementioned distribution will not probably eventuate in real and permanent benefit; unless it be used in a way different from what is generally anticipated. Would not the money distributed be advantageously employed, if appropriated for the purpose of continuing the public schools for a greater number of months every year, than has been customary, or of securing able instructors, by the offer of an adequate salary?

A part of the money might be very usefully expended in the purchase of apparatus of a cheap and simple kind, for the object of elementary instruction in the practical sciences. Both pupils and teachers would be benefitted by such assistance.

NOTICES.

Works in the Department of Education.

History of the States of Antiquity. From the German of A. H. L. Heeren, Professor of History in Gottingen, and Member of the Royal French Academy of Inscriptions. Northampton, Mass. S. Butler, and G. and C. Carvill, New-York. 1828. 8vo. pp. 487.

History of the Political System of Europe and its colonies, from the Discovery of America, to the Independence of the American continent, from the German of A. H. L. Heeren, Professor of History, &c. Northampton, Mass. S. Butler, &c. 1829. 8vo. 2 vols.

As soon as the animal wants are provided for, we naturally seek for knowledge and power. Of all knowledge, the most interesting is that which relates to the nature and destination of man. Self interest sends us on this inquiry in search of profitable lessons for the regulation of our own lives, aided by the sympathetic principle which prompts to a participation in the weal or woe of our fellows. We run to the play and the novel, the court of justice and the crowded assembly, to seek for new views of life, we unravel the web of metaphysics to ascertain the secret springs of human action, we open the volume of history to learn the doings and the sufferings, the character and destiny of the collective race of man. Individuals, nations, ages, all are the subjects of our study. History, therefore, is among the subjects which first occupy the human mind, and dates its origin before the era of civilization. It appears successively in the traditions of the savage; in the poetical colourings of the early epic, in the simple prolixity of the chronicle, in the philosophical narrative which analyzes the causes and consequences of events, and finally in compendiums like those before us, which are intended to introduce the student to the stores of knowledge accumulated through ages. The qualities required in the last class of works are order and precision, accurate statements and judicious reflections. These merits seem to us, to belong to the works of Mr. Heeren, who is considered by his countrymen, one of the best of their living historians. The manual of ancient history begins with the earliest times, and comes down to the destruction of the Roman empire in the west. It contains five divisions. 1. The Asiatic and African states before Cyrus. 2. The Persian empire. 3. The states of Greece. 4. The Macedonian monarchy. 5. The Roman state. The general divisions are of course subdivided. The geography of the several countries included under one division, is given in the first instance, succeeded by a few general remarks on their history, accompanied with references to the best works ancient and modern, which furnish par-

ticular information respecting their remarks on the merits of each. Then follows a condensed chronological sketch of the history of the several states, interspersed with short but just reflections on the character and condition of each, and the causes of their good or bad fortune. The book contains much information in a limited compass, and may be used with advantage by the teacher, as a text-book, by the young student to direct his reading and condense his acquisitions, and by readers of all descriptions as a book of reference.

The preface to the French translation of the *Manual*, says of it, that 'it is to be considered as a synopsis, in which the most important and precise ideas respecting the constitutions, and the revolutions of the several states are given with order and clearness, and many portions of ancient history, which appear confused even in long and elaborate works, are treated with distinguished talent and erudition. We would cite as instances, the accounts of the Greek colonies, of the successors of Alexander, of the Parthian kings, &c.' Heeren says in his preface translated in the same work, 'The objects which have principally attracted my attention are, the formation of states, the changes which have taken place in their constitutions of government, the direction which they have given to the commerce of the world, the degree in which each has participated in it, and, as immediately connected with this part of the subject, the aggrandizement of the various nations by the means of their colonies. I have felt myself bound not merely to give a simple narrative of events, but to trace their course and connexion, and explain the causes of national development.'

The objects of the author seem to us accomplished, and the remarks of the French translator correct. This *Manual*, in our opinion, surpasses its predecessors in order and accuracy, in sound views and copious references to the best sources of information. The compendium of modern history, beginning with the end of the 15th century, and coming down to the year 1821, has similar merits. We think the translations will prove useful additions to our books of instruction. Our system of study has been hitherto too desultory and superficial. As population becomes condensed, life systematized, labour divided, and competition increased among us, the want of a more thorough education is felt. The best European text-books should be introduced into our schools and colleges; and we are under obligations to Mr. Bancroft for giving us the *Manuals* of Heeren in an English dress. Considering the translations as elementary books, intended to be used in our colleges, we think they would have been better, if German idioms had been more studiously avoided. The intimate acquaintance of the learned translator with the language and literature of Germany, has made him partial to some phrases and constructions which sound harsh to an English ear. In the next edition, (for we trust there will be many,) these small blemishes, we hope, will be removed. The *Manuals* will then be entitled to a very respectable place among the higher class of text-books.

Geometry for Schools. By Josiah Holbrook. Boston. 1829.

WE are grateful for the attempt of Mr. Holbrook to make Geometry

a study for children, as we think it may give an impulse to some more successful undertaking for the same purpose.* The fault of this book is, that the questions do not serve to lead the mind of the pupil to make the discoveries himself; they merely serve to remind him of the several sentences which he must previously learn by heart; thus the book is, after all, an exercise of memory, and not of that power of the mind which apprehends proportion.

To make ourselves fully understood, we will claim the attention of our readers to some remarks on the method of teaching the exact sciences. That this subject is yet in obscurity, is evident from the little success attendant on instruction in this department. Few children who go to school with a prepossession against arithmetic, become tolerable arithmeticians. And how small is the proportion of mathematicians to linguists in every university! A friend has assured us, that in the University of Gottingen, when it has taught three thousand pupils, and every other lecturer had a thousand hearers; the lecturer on mathematics commenced his course with sixty, and ended it with three; and the lecturer one of the first mathematicians of Europe.

But when we reflect that no human mind can at the same time be sound and *not* endowed with the power of apprehending those axioms which include within them the mathematics, and that the practical applications of this science are most important in common life; we must feel both that the methods of teaching are essentially defective, and that to remedy the defect is most desirable.

The evil lies at the very beginning. The defective method bears upon the first stages of the instruction in arithmetic given to children who are naturally slow in calculation, or, to speak more accurately, whose power of calculation is comparatively late in its development. Children whose mathematical faculty develops before the age when school discipline commences, get the start of their instructors; they have methods of their own, and almost unconsciously throw all questions into a form corresponding to their own methods. And besides, the practical questions which circumstances give them, are level to their capacity, constant success gives them a calm sense of power, before which all difficulties vanish. It has been remarked, that the mind often goes to a certain point in mathematics, and then stops. We apprehend that this, however, is no proof of a limited capacity, and that were no violence done the mind, no hurrying forward of the faculties to grasp what is at present beyond them,—but patient courage possess the mind, it would go on, after an interval, as before.

But we will dismiss the consideration of the case of those, who have mathematical genius. They are not the only ones who must study arithmetic. No individual of either sex, can be placed in any situation in life, in which a knowledge of arithmetic is useless, and to which those powers of mind are not *indispensable*, to whose evolvment the exact sciences mainly contribute.

The danger of this false exercise of mind is especially to be guarded against. Children, slow in calculation, or even indolent, will always

* We are happy to learn that a second edition of this little work will soon be wanted. The suggestions offered above, will, we doubt not, receive attention from the author.

be in danger of endeavouring to supply the deficiencies of calculation by memory. And if they go to school, they have an excellent opportunity to do so, easily acquiring it by rote, in hearing the recitations of their companions. Even the plan of Colburn does not entirely neutralize this danger. It tends however to do so, and especially if the lessons are recited faithfully. But it often happens that the pupil may perfectly comprehend one section of the book, while the next is beyond him for the present; and unless there is care taken, in a few drillings the next will be acquired by rote.

When the mind staggers at any particular class of operations, the teacher should in the first place make himself quite sure that all the preceding processes are perfectly familiar, not only in the practical applications, but in the *rationale*. This may be aided by a parallel knowledge of geometry; and if, after this, the mind does not spontaneously start forward, nothing can be done but to rest a little; and if there is no despair, which is the common source of mental helplessness, this waiting will not be in vain. New power will come.

It is, indeed, difficult in many instances, to discriminate between want of comprehension and indolence, which produces precisely the same effects. Against the latter there is no guarding, except by moral means, but these should never be neglected, if the teacher would be faithful. There can be no uniform progress in these sciences, when the mind is originally slow or disinclined to them, unless there is strict conscientiousness. The pupil must be made aware that the power by which he apprehends mathematical truths is the gift of heaven, something which the will may take advantage of, but which it cannot create;—that faithfulness in the exercise of this power, and exercise of it on its appropriate subjects is necessary, lest it be altogether lost; that the result must always be reasoned out, and not merely remembered. These views should often be recalled to the pupils' mind by the teacher at the moment of recitation, and their honour and integrity brought so into exercise, that he may be able to say in any particular instance, 'Have you calculated, or did you remember the answer?' In doubtful cases, and often, at any rate, he should require the reasoning to be audibly detailed.

A child naturally inclined to arithmetic, and of quick talent in this department, will not need so much care, it is true. It is the instinct of mind, when it is powerful, to be true to itself; and this holds good of any particular talent which is peculiarly powerful.

But though this care is especially necessary for a child, who from original want of talent for arithmetic, is tempted to exercise his mind falsely, it can do no harm to any child. There is an important moral good to be derived from giving children a sense of religious responsibility in the exercise of their minds. Besides, it is giving the best ground work for future progress and discovery, in the sublime regions of mental philosophy, to turn the attention of children, early, to the discrimination of their various faculties, appropriating each to its proper department of inquiry and exercise. 'There are other studies to strengthen your memory: arithmetic is intended to improve your judgment,'—is a truth, which any child who is old enough to study arithmetic can understand.

There is great danger in stimulating the pupil except by moral motives. All others will produce excitement injurious to the mind.

But even moral motives should not be urged violently. There is nothing gained by violence, in the mind, especially in the exercise of those powers which are denominated intuitive.

Journal D' Education, publié sous les auspices de la Société formée à Paris pour l'amelioration de l'Enseignement Elémentaire. XIII. Année.—Mai. 1828. A Paris, chez Louis Colas.

This publication was introduced to the notice of our readers, in a former number. It was mentioned as the organ of the Society for Elementary Instruction, whose chief object is the establishment of monitorial schools throughout France.

The number before us contains the transactions of the annual meeting of the above society, held on the 20th April last,—the introductory speech of the honorary president, the Duke de Doudeauville, and the 'thirteenth annual report,' by the secretary general, the Baron de Gerando. From this report it appears, that, in the city of Paris, there are, besides the schools for adults, twenty five for pupils of both sexes, taught on the plan of mutual instruction, and containing 2268 boys, and 1462 girls. Flourishing schools are also said to exist in upwards of seventy towns and other places, which are named. The evening schools for adults, in the city of Paris, contain 145 males, and 103 females. The receipts of the society for the year 1827, amounted to 23,056 fr., 75 c.: the expenditures to 20,993 fr., 80 c. A report from the 'committee on publications' mentions the popular almanac, and several other useful works, to which the annual premiums of the society were awarded.

Twenty Third Report of the British and Foreign School Society, to the General Meeting, May 12th, 1828. London. Longman & Co.

Those of our readers who are unacquainted with the nature and objects of this institution, we must, for the present, refer to the intelligence contained in the closing number of our last volume. The Report, of which the title is given above, offers a concise and very interesting view of the operations and influence of this philanthropic institution, throughout the British empire, and in the dominions of other nations. The number of schools is everywhere rapidly increasing; and their usefulness is daily becoming more sensibly felt, in the general advancement of character, as well as the wider diffusion of education and intelligence. The income of the society for the year 1827, was 2508*l.* 17 2—expenditure, 2238*l.* 16 4.

Defence of The British and Foreign School Society. By e. London. 1828.

Reasons for a Churchman's Adopting the Principles of the British and Foreign School Society. By e. London. 1828.

These pamphlets contain sound and forcible argument, expressed with 'the meekness of wisdom.' Their contents, however, could excite but little interest in the minds of American readers. That singu-

lar offspring of bigotry, a *religious* hostility to education, is happily unknown in this country.

An Annual Discourse, delivered before the Historical Society of Pennsylvania, November 19, 1828. By Thomas McKean Pettit, Esq. Philadelphia. Carey, Lea, & Carey. 12mo. pp. 38.

The author of this discourse has selected, for his subject, an historical sketch of public efforts for the advancement of education in the state of Pennsylvania. He commences with an account of the 'University of Pennsylvania,' situated, as most of our readers know, in the city of Philadelphia, and which originated in a school founded by the enterprise of Franklin, about 1750. A few interesting facts are also stated in reference to the 'Western University,' authorized by a legislative act of the year 1819, and now rising under very promising auspices in the town of Pittsburg. A sketch of the colleges follows, embracing the history of Dickinson college, at Carlisle, established in 1783; Jefferson college, Canonsburg, 1802; Washington college, Washington, 1806; Allegheny college, Meadville, 1817; Lafayette college, Easton, 1826; Madison college, Uniontown, 1827.

The academies existing in the state, amount, it would appear, to upwards of fifty,—most of which, as well as some of the colleges, are, by their charters, bound to educate, without charge, a given number of youth whose parents are in indigent circumstances.

The legislative enactment of March, 1824, for 'a general system of education throughout the commonwealth,' received 'so little support and encouragement' from the people of the state, that it was repealed in 1826. A system of general education is still wanting in that populous state. Such we trust will not long be the condition of the intellectual interests of a community otherwise so prosperous. In Philadelphia, great progress has been made, towards the general diffusion of education. The city and county of the same name, are, by an act of the legislature, March 1818, designated as 'the first school district of the state,' divided into sections, each provided with a board of directors, and the whole superintended by a board of controllers. The Lancasterian, or monitorial system of instruction, is adopted in the schools. Upwards of 29,000 pupils have thus been provided with the advantages of elementary education, at an annual expense not exceeding four dollars for each scholar.

This pamphlet, so rich in valuable information, will, we hope, prove useful to the interests of education in Pennsylvania, by securing attention to the subject of a general system of public schools,—for which many excellent advantages are now offered in the successful experience of other states.

The Report of a Committee appointed at a public Meeting of the friends of Education, held at the State House in Trenton, on the night of the 11th November, 1828; exhibiting a succinct account of the state of Common Schools in New-Jersey, derived from the Reports of the Central Sub-Commit-

tees of several Counties and Townships in the State, Trenton. D. Fenton. 1828. 8vo. pp. 46.

This pamphlet contains many important statements, drawn from the communications of the committees mentioned above. Some of the facts disclosed by the inquiries of the committee whose report forms the substance of the pamphlet, are of a very unfavourable character as regards the condition of education in New-Jersey. Upwards of *eleven thousand* children, in that state, are, it appears, unprovided with instruction.

To the main contents of the pamphlet are added a number of letters received from official personages in various parts of the Union, giving an account of the school system adopted in each, and forming, as a whole, one of the most satisfactory publications on the subject of general instruction, that has yet been offered to public attention. The materials thus accumulated by the industry of the New-Jersey committee, will form, we hope, the means of direction and guidance to active measures for popular education in other states.

An Address delivered before the Members of the New Bedford Lyceum, at their first meeting, December 18th, 1828. By Thomas A. Greene. New Bedford. 1829. 8vo. pp. 10.

This address is, we trust, 'the precursor of many useful discourses from the New Bedford Lyceum. The present publication, indeed, itself will prove serviceable as a guide to the establishment of Lyceums in places where they do not as yet exist, or are not fully organized.

Mr. Greene commences his address with a brief and general view of the object of the Lyceum, which he states to be 'mutual improvement.' The means by which this result is to be attained, are the formation of a 'library,' the procuring of 'philosophical apparatus,' and the collection of a cabinet of specimens in natural history, in its various departments.

The exercises of this Lyceum, however, are not to be restricted to subjects of physical science. Topics of a general nature, and drawn from moral, political, and literary sources, are to be introduced.

The effects probably resulting from the establishment of the Lyceums, are described in a very interesting manner. But our present limits will not afford room for quotation. We would recommend this pamphlet to the attention of Lyceums in general, as one which may suggest valuable hints, in relation to the various objects of associations for mutual improvement.

The Fourth Report of the American Sunday School Union, read at their Annual Meeting, held in the city of Philadelphia, on Tuesday afternoon, May 20th, 1828. Philadelphia. 1828.

From this document it appears that there are established under the auspices of the Sunday School Union, 3760 schools, containing 32,809 teachers, and 259,656 scholars. 'The total number of children receiving Sabbath school instruction in the United States, may be estimated

at 345,000, or about one seventh of that portion of our population which is between the ages of five and fifteen years.'

Third Annual Report of the Massachusetts Sabbath School Union, presented at the Third Annual Meeting, May 29th, 1828. pp. 64.

This Report states, among other articles of intelligence, the number of schools connected with the above society as amounting to 330,—teachers 5,253,—scholars 39,241.

The Christian Teacher's Manual, designed for Families and Sunday Schools. Vol. II. No. 4. (for February, 1829.) Boston. Bowles & Dearborn.

From an interesting account of the last annual meeting of the 'Boston Sunday School Society,' we copy the following paragraphs, which form part of a report of the observations made by one of the speakers at that meeting.

'Behold that hovel,' said he, 'through whose chinks the winter wind whistles. In its comfortless and single apartment, behold that wretched woman! See her wan cheek! It is a mother,—and on that miserable bed, her dying child! Its moan agonizes her heart. Hark! it asks for a drop of cold water to cool the raging fever; *but first, mother, kiss me.* The scene is over; the mother is childless; the spirit has gone to the throne of its Father; but it has gone *educated!* That mother, in her wretchedness and in her poverty, had yet opened a fountain of love in the heart of her child. It flowed in the desire for that caress; the fountain will flow for ever; it is the water of life; it is the element of worship; it is heaven. This is education.

'Father! You take your boy with you to your place of business; you are engrossed, and he is forgotten; but by the instinct of nature, the light hearted boy watches you. He is curious to see your actions; he speculates upon your conduct. *He sees you sacrifice interest to duty, the outward good to the inward sentiment.* He returns with you to the evening repast. When he went with you, he felt the affection which an animal always feels for his benefactor. He returns with a moral sentiment; *he reverences you.* This is education!'

Fourth Annual Report of the Trustees of the High School Society of New-York, made on Saturday, November 29, 1828. New-York. 1828.

The continued prosperity of the New-York High School is indicated by the following intelligence gathered from the above Report. 'In the male introductory department there are, at present, 170 boys;' 'in the junior, 142;' and in 'the senior, 113.' In the High School for Girls there are 305 pupils. Of these, 129 are in 'the lower or introductory rooms;'—90, 'in the middle rooms or junior department;'—86, 'in the higher department.'

The information contained in the following paragraph is of great importance, as regards the general advancement of education.

‘We have also to report that the Trustees have from time to time made such regulations, in regard to some of the younger teachers and monitors, as might afford them the best opportunities of education, trusting that thus might be prepared a succession of Teachers familiar with the best application of the monitorial system, whose individual character and attainments would be known to the Trustees and other officers, and who would hereafter, as vacancies may occur, be fitted to occupy the stations of our present Teachers. They have made these arrangements with the more cheerfulness, from the conviction that if in any case, those so educated should not be called into the service of this school, our ultimate object will not be the less promoted by having prepared accomplished female teachers for other schools, public or private, at small expense to us and to great public advantage.’

A large portion of the pamphlet from which the preceding extract is made, is occupied with a just and eloquent tribute to the memory of the late associate principal of the High School, Daniel H. Barnes. From this interesting sketch an extract, obtained through one of the newspapers, was given, by anticipation, in our last number.

Annual Report of the Trustees of the Albany Lancaster School Society. February 2d, 1829. Albany. 1829.

The Albany ‘Lancaster School’ was first established by the corporation of the city of Albany, in October 1811, with an annual appropriation of \$400. The Directors of the school were incorporated by a legislative enactment of May 1812; and by a provision of the common school act of the same year, the share of school money appropriated, from time to time, to the city of Albany, is paid to the trustees of the Lancaster school, with a view to ‘the education of such poor children belonging to the city, as shall be, in the opinion of the trustees, entitled to gratuitous education.’

In addition to the general Lancaster school, a part of the above fund was appropriated in 1820, for the support of a school ‘for the education of poor children of colour.’

At the solicitation of the trustees of the Lancaster school, the trustees of the Albany Academy admit to gratuitous instruction in the higher branches of education, a certain number of pupils from the ‘school,’ who are thus promoted, as a reward of superior merit.

Prospectus and Regulations of the A. L. S. & M. Academy. September 1st, 1828. Middletown, Con.

From the preliminary statement of the Trustees we learn that this academy has been re-organized, with the concurrence and approbation of Capt. Partridge, so as ‘to avoid the evils incident to an exclusive exercise, by one individual, of all the powers and duties of government and instruction,’ and to secure the permanency of the institution, by ‘guarding against the contingencies of his removal, disability, or death.’

Capt. Partridge, as president, exercises in conjunction with the trustees, a general supervision of the affairs of the institution; while the

immediate government is vested in the president, superintendent, and professors.

Reports on the Course of Instruction in Yale College. By a Committee of the Corporation and the Academical Faculty New-Haven. Hezekiah Howe. 1828. 8vo. pp. 56.

Our notice of this able and interesting pamphlet we are unexpectedly obliged to defer till next number. In the meantime, we would recommend it to the particular attention of those of our readers who take an interest in the subject of college education.

The Western Monthly Review for January, 1829. Cincinnati. E. W. Flint.

We mention this respectable periodical, for the purpose of attracting the attention of those of our readers who have opportunity to peruse it, (at reading rooms or otherwise,) to a long and eloquent article in this and the two preceeding Nos., on the subject of a national university. Of this article we intended to give a brief synoptical sketch in the present number of the Journal. Want of room, however, compels us to omit it.

The Transylvanian, or Lexington Literary Journal. No. 1. January 1829. Transylvania Press.

This publication, (edited by professor Mathews of the Transylvania university,) is intended to secure the aid of local interest and character, to the diffusion of useful knowledge; to give publicity to valuable discoveries; and 'to mark improvements in the science and art of teaching.'

The contents of the number are apparently well suited to these objects; and the general character of the style and execution is highly respectable. The merit of the poetical articles, however, we would leave to be discussed in publications which are more strictly connected than ours, with matters of taste and the arts.

A Lecture on Rail Roads. Delivered January 12th, 1829, before the Massachusetts Charitable Mechanic Association. By William Jackson, a Member of the Association. Boston: Crocker & Brewster. 1829. 8vo. pp. 32.

This instructive discourse we would mention, as one which we hope will be perused at every Lyceum in this and the neighbouring states. It contains much practical information on a subject of immediate interest to the community. It serves also to furnish very satisfactory proof that persons engaged in the business of active and industrious life, may occasionally confer important benefits on society, by joining associations for mutual instruction, and communicating, through such channels, the results of their reading and investigation.

Errors in Common Education. An Address delivered in Brooklyn, (Conn.,) October 22d, 1828.

This practical and interesting address was published in successive Nos. of the Brooklyn Journal. Like the pamphlet mentioned in the preceding notice, it is one of the valuable fruits of the Lyceum. We know not how a more effectual service could be rendered to common schools, than by the circulation of a large edition of this discourse, which is so happily adapted to the great end of promoting improvement in education. We cannot omit this opportunity of expressing our hope that the Brooklyn Lyceum will take measures, at the earliest opportunity, for accomplishing this object.

Catalogue of the Mount Pleasant Classical Institution. Amherst, Massachusetts. January 1829.

The general plan of this seminary was presented to our readers in former Nos. From the pamphlet before us we extract the following intelligence.

‘This Institution, established on the general plan of the Academic and Commercial Gymnasia of Germany, was opened on the 1st. of June, 1827. In order the more fully to secure the advantages of parental guardianship and supervision to all its members as a *family*, the number of pupils was limited in January 1828, to one hundred. During the greater portion of time which has since elapsed, this number has been actually engaged in study at the Institution, and a considerable number of names always entered in advance. These circumstances have induced its founders to extend the means of instruction much beyond the original plan. Since the last annual catalogue was issued, the number of Professors and Instructors has been increased from nine to fourteen.’

An Address delivered at Hanover, October 29th, 1828, at the Inauguration of the Author as President of Dartmouth College. By Nathan Lord, D. D. Published by request. Windsor, Vt. 1828.

The importance of the subject of this address, and the judicious views and candid manner of the author, demand a much more particular notice than our present space can afford. Experience, however, convinces us, that it is impossible to keep even pace with the progress of cotemporary publications of this nature. Instead, therefore, of attempting an inadequate analysis of this pamphlet, we would present to our readers the following passage on a subject of vast importance to all stages of instruction, and to every individual engaged in any department of the great business of training the mind and forming its habits.

‘The changes which have taken place, and are still occurring in the methods of instruction, at the preparatory schools, may be hoped so far to hasten the development and strengthening of the intellectual powers, as that the student may come, at an earlier period of his college course, to that class of studies which call more immediately for the use of

reason, and give it direction in its inquiries after truth. The impulse which the mind receives from an acquaintance with its own powers, and their application to some branches of intellectual philosophy, is a matter of general experience. Every one recollects the pleasure of his first acquisitions in this department of study, and the ardour with which he thenceforth aspired to higher attainments. He breathed a freer air, he went forward with a new confidence, and his application to all the duties before him became more easy and more successful. If, then, we might, almost on the threshold of a public education, habituate the mind to itself, and aid it in some of the more simple essays of its own powers, it would seem, that we should prepare it for the readier perception of classic beauties, and for mastering more effectually the elements of mathematical, political, and moral science.'

[The more important of the following publications will be selected for further notice in subsequent numbers.]

The American Sunday School Magazine for January, 1829. Philadelphia. American Sunday School Union. 8vo.

The Youth's Friend and Scholar's Magazine for March, 1829. American Sunday School Union. 18mo.

Annual Report of the Superintendent of Common Schools. Made to the Legislature of the State of New-York. February 6th. 1829. Albany, 1829.

[See intelligence concerning education in New-York, p. 78 of this No. of the Journal.]

Catalogue of the Teachers and Scholars of the Young Ladies' High School. Boston. January 1829.

Mr. Bailey has appended to this pamphlet several useful suggestions regarding education. These we shall take the earliest opportunity of laying before our readers. As an evidence of the increasing interest taken in superior efforts for the education of females, we may mention that this catalogue presents a total of 168 pupils.

The Sabbath School Visitant and Juvenile Magazine for January, 1829. Utica. G. S. Wilson.

Abstract of the Returns of the Selectmen of Towns, and Assessors of Plantations, of the number of School Districts, number of Scholars, and the amount of Money raised and expended for the support of Schools in Maine. Published by order of the Legislature. 1829. Portland.

First Lessons in Latin, upon a new plan ; combining abstract Rules with a progressive series of practical Exercises. By Charles Dexter Cleveland. Boston. Benjamin Perkins & Co. 1829. 12mo. pp. 197.

An expeditious method of learning the Latin Language ; exemplified in a Literal Interlineary Translation of the First Part of Jacob's Latin Reader. Salem. Foot & Brown. 1828. 12mo. pp. 197.

An Abridgment of Adam's Latin Grammar, with some corrections and additions. Boston. Wells & Lilly. 1824.

For the lateness of our notice of this valuable school book, we can offer no apology but that of our not having been aware, till within a few weeks, that such a work was in existence. The expediency of using abridgments, is questioned by teachers of ability and experience. But this is a point, which we have not room here to discuss. It was adverted to, our readers may recollect, in some observations on Mr. Gould's edition of Adam's Grammar; and to these we must for the present refer.

This compend will, we think, be found very useful in the instruction of young learners generally, and of female pupils in particular. It will be of important service, also, to young teachers, as a guide to the best course of selections from the larger editions of the grammar. For this use it may be safely recommended; as it comes from the hands of one, on whose judgment much confidence is justly placed.

Essays on the Philosophy of Instruction, or the Nurture of Young Minds. Phelps & Clark. Greenfield, Massachusetts. 1829. 18mo. pp. 85.

An article on these essays is in preparation. In the mean time, we would earnestly recommend the pamphlet itself to the attention of parents and teachers, and especially to such of the latter as are engaged in the instruction of young children.

English Grammar in Familiar Lectures, accompanied by a Compendium embracing a new systematic order of Parsing; a new system of Punctuation; exercises in false Syntax; a system of Philosophical Grammar, in Notes; and a Key to the Exercises. Designed for the use of Schools and private learners. By Samuel Kirkham. Tenth edition, enlarged and improved. Rochester, N. Y. Marshall & Dean. 1829. 12mo. pp. 216.

This book presents the substance of Murray's Grammar in an explanatory form; and offers at the same time, the views of later grammarians, in a series of collateral notes.

A Catechetical and Practical Grammar for the use of Schools. By A. F. Wilcox of the Bridgeport High School. New-Haven, S. Wadsworth; and R. Lockwood, New-York. 1828. 18mo. pp. 110.

This little volume also contains Murry's system of Grammar, but reduced to a catechetical form, and revised in the department of syntax.

Inductive Grammar. Designed for Beginners. By an Instructor. Windsor. S. Ide. 1829. 18mo. pp. 54.

This manual would be better styled a help to inductive teaching.

than an 'inductive grammar.' It gives the *results* rather than the *process* of induction. It offers the *conclusions* to which the mind is brought by the study of grammar, rather than the *reasoning* by which these conclusions are attained. Still, it is ingenious and original in its plan, and, in the hands of a competent teacher, may be made very useful.

An Abridgment of English Grammar. By J. Emery, A. B. Wellsborough, Pa. B. B. Smith. 1829. 24mo. pp. 39.

This is an outline of grammar, intended to be filled up by explanation, and furnished with examples by 'the living teacher.' An intelligent instructor may, with the aid of the 'black board,' render this epitome equal to the common purposes of instruction in primary schools.

The Juvenile English Grammar. By the Author of 'The Little Traveller.' Boston. 1829. Benjamin Perkins & Co. 18mo. pp. 89.

This is a selection of the most important parts of grammar, explained in familiar dialogues.

The Youth's Assistant in theoretic and practical Arithmetic. Designed for the use of Schools. By Zadock Thompson, A. M., Author of the Gazetteer of the State of Vermont. Improved Edition. Woodstock, Vt. 1828. David Watson. 12mo. pp. 216.

This book is divided into three parts: the first, composed on the plan of Colburn: the second, on that of Lacroix: the third is practical and miscellaneous.

A practical System of Modern Geography, or a View of the present state of the World. Simplified and adapted to the capacity of Youth. Accompanied by a new and improved Atlas. By J. Olney. Hartford. D. L. Robinson & Co. 1828. 18mo. pp. 207.

This compend differs from the many that have appeared since that of Woodbridge, chiefly in more simplicity of arrangement, and a method of instruction more dependent on the use of the maps.

Introduction to the National Reader, a selection of Easy Lessons, designed to fill the same place in the Common Schools of the United States, that is held by Murray's Introduction, and the compilations of Guy, Mylius, and Pinnock, in those of Great Britain. By John Pierpont; compiler of the American First Class Book, and the National Reader. Boston. Richardson & Lord. 1828. 12mo. pp. 168.

Of this school book we had occasion to speak, while it was in the

press. For the present, we must refer to the notice then taken of it, as from want of room, we can only say that this compilation seems well adapted to the object mentioned in its title page.

The Spelling Reader, or Concordant Spelling Book. By Jeremiah and Anna T. Goodrich. Albany. 1828. 12mo. pp. 156.

The chief peculiarity of this book consists in its being so arranged as, in one part, to present on every page a reading lesson, from which the words of the spelling lesson are extracted. This is certainly a good point in the plan of the exercises, but much of its value must depend on the style of the pieces from which the lessons are taken. Unfortunately the selection has been made from the Scriptures; the style of which, as is well known to teachers, though very simple in structure, contains many words of very difficult pronunciation.

The General Class Book, or interesting Lessons in Prose and Verse, on a great variety of subjects, combined with an Epitome of English Orthography and Pronunciation; and intended as the Third Book in a course of Reading for the use of Schools. By the Author of the Franklin Primer, and the Improved Reader. Greenfield, Mass. Phelps & Clark. 1828. 18mo. pp. 312.

Of the other volumes in the series mentioned on the title page of this, we have already spoken, as valuable improvements in the compilation of school books. The present work seems, with the exception of a few points regarding pronunciation and inflection, excellently adapted to its objects. We would recommend it, along with the others, to the particular attention of teachers and school committees.

Johnson's Dictionary, improved by Todd. Abridged for the use of Schools; with the addition of Walker's Pronunciation; an abstract of his principles of English Pronunciation, with Questions; a Vocabulary of Greek, Latin, and Scripture Proper Names; and an Appendix of Americanisms. Boston. Benjamin Perkins & Co. 1828.

The chief merit of this dictionary consists in its combining the definitions given by Johnson with the orthoepy of Walker. As a standard book for common schools, it may serve to aid the attainment of an intelligent uniformity in instruction, as far as regards that very important but much neglected branch of it, the English language. To make the work adequate in all respects, however, to this useful purpose, it would perhaps require a brief and practical introduction, explaining some of the apparent singularities of Walker's system of pronunciation, and pointing out the words in which Johnson's orthography is become obsolete; as, for example, in 'error,' 'critick,' and similar words.

Books for Children.

The Infant School and Nursery Hymn Book ; being a Collection of Hymns original and selected, with an analysis of each, designed to assist Mothers and Teachers in developing the Infant Mind. To which are added Moral Songs and Pieces for Recitation. The whole adapted to the capacity of Children under seven years. New-York. W. Carey & R. Lockwood. 1828 18mo. pp. 126.

Questions and explanations are justly considered by the author of this little volume as among the chief means of rendering early instruction intelligible and interesting. We doubt, however, whether any method of tuition, could render some passages in several of the hymns in this collection intelligible to young children. An unnecessary and degrading vulgarity of thought and style characterizes not a few of these pieces. In a word, we should dread the mental influence of this volume, throughout. To the opening mind of infancy it seems to offer low, formal, and mechanical views of most of the subjects which are introduced in it.

We select one specimen of the faults of which we complain :—

‘ God made the water for my drink,
God made the fish to swim ;
God made the trees to bear nice fruit,
Which does my taste so nicely suit ;
Oh ! how should I love him.’

Walks with Mamma, or Stories in Words of One Syllable. New-York. Samuel Wood & Sons. 18mo. pp. 48.

With the exception of one or two passages in the third and fourth stories, this book furnishes much instruction in a very natural and interesting form. The thoughts are simple and at the same time elevated ; and the language is familiar without being silly or low. A few grammatical inaccuracies, however, seem to have escaped the notice of the author.

The Infant’s ‘First Book for Lessons in Reading. Boston. Benjamin Perkins & Co. 1829. 18mo. pp. 22.

This little work is a pretty successful exemplification of rational and affectionate conversation with infant children. We must question, however, the character of some of the motives to goodness, which are held up to the young reader in the seventh and eighth pages of the book, and some of those mentioned in the twenty first page.

The reasons for moral action should, even in the stage of infancy, be drawn as directly as possible from the mind itself, by apposite questions, instead of being inculcated by tuition.

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ART. I.—*Pestalozzi's Principles and Methods of Instruction.*

[We have long been in expectation of receiving materials for an article similar to the present ; and as delay may still be attended with disappointment, it has seemed preferable to compile from the *Academician** the following concise but clear and satisfactory account of Pestalozzi's mode of conducting education, as exemplified in his own seminary.

To parents and teachers, and, indeed, to all who are interested in the success of elementary instruction, the views disclosed in the subsequent paragraphs are of inexpressible importance. We shall feel happy to contribute, in the slightest degree, to their more extensive dissemination.]

PESTALOZZI endeavoured, in the first place, to ascertain by questions adapted to the tender age of the pupil, whether any idea existed in his mind upon the subject to which he wished to direct his attention ; and from any one clear idea of which he found the child in possession, he led him on, by a series of questions, to the acquirement of such other ideas as were most intimately connected with that primary conception. Thus, for example, suppose that he found in the child an idea of the existence

* For the information of some of our readers, it may not be uninteresting to state the circumstance, that the useful publication mentioned above, preceded our own, as a periodical devoted to education,—a fact of which we were not aware, at the commencement of the Journal. The *Academician* was published in the city of New-York, under the editorial care of Mr. Picket, at one time a very reputable teacher, and a successful author in the department of school books. The work, though not of long continuance, contained much valuable matter.

of a being whom he called God. Instead of teaching him to repeat by rote the notions communicated by divine revelation on what constitutes the basis of all religious principle, he proceeded, by questioning him, to direct his attention to such attributes of the divine power, wisdom, and goodness, as were immediately within reach of his perceptions, concerning the unbounded love, and all-directing providence, of the supreme Being. Clear ideas were in this manner obtained; and thus the infant mind was led, at an early period, to objects, which cannot, at any period of life, be contemplated without producing correspondent emotions of reverence, gratitude, love, and veneration.

Having thus prepared the heart for obeying the '*first great commandment*,' by leading to a consideration of the omnipresence of the deity, he rendered the impression deep and permanent. It was thus that he laid the foundation for the belief and practice of the doctrines and duties of Christianity, when the faculties of the understanding should be sufficiently ripened for comprehending the importance of the truths that have been revealed. It was in the same manner, and by the same principle, that he inspired his pupils with correct notions of justice, probity, and benevolence. The duty of doing to others as they would have others, in like cases, do to them, appeared, as it were, a discovery of their own, a truth demonstrated and unquestionable. Led also in the same manner, to a perception of the utility of order, they became conscious of the necessity of adhering strictly to rules and forms of discipline, essential to the preservation of that order, of which they felt the benefit and advantage. Instructed, and in a manner compelled to think, and to examine the motives of their conduct, they learned to set a value on self approbation, confirmed by the approbation of those in whose wisdom they placed confidence.

We may easily believe, that when the moral feelings have been rendered thus susceptible, the dread of losing the esteem of a revered instructor, would impose a restraint more powerful than is imposed by terror of punishment.

A few particular methods judiciously planned, and carefully practised, were made to exert the minds of his pupils in the acquirement of clear and accurate notions concerning the objects of perception, which were brought within the reach of their observation; and thus their mental powers, instead of being suffered to remain *dormant*, were gradually developed and improved, and rendered capable of being exerted on other subjects.

The *principle* adopted and adhered to by Pestalozzi, is, in its nature, universal ; and may be universally applied. It is neither deep nor intricate, nor beyond the comprehension of the most ordinary capacity. In few words, *it is simply attending to the laws of nature.* By these it has been ordained, that the human understanding, though it may be generally opened, and enabled to embrace a vast extent of knowledge, can only be opened gradually, and by a regular series of efforts. Pestalozzi, perceiving that, when one idea upon any subject had been acquired by a child, the next in succession was no sooner presented than imbibed ; and also observing that when it was attempted to force upon children, ideas having no connexion with any that had previously entered their minds, took the hint from nature, and wisely formed his plan in conformity to hers. Instead of making children repeat words that suggested ideas to his *own* mind, he set himself to observe what were the ideas that actually existed in *theirs*. He then, by questions adapted to their capacities, induced them to make such further exertion of their powers, as enabled them to add new ideas to their slender stock, and by persevering in this process, expanded their faculties to a degree, which, to those best qualified to judge of the difficulties of the abstruse sciences he professed to teach, seemed little short of miraculous.

The *means* employed by Pestalozzi, to improve the heart and disposition, are extremely simple and obvious ; yet simple as they are, and infallible as is their operation, many and obstinate are the prejudices that must be surmounted, ere we can expect to see them generally adopted. The effect resulting from them, as exemplified in the school of morality, is what has been termed by our old divines, '*the practice of the presence of God.*' Other children are taught to say that God is ever present ; but the pupils of Pestalozzi, are taught to *know* and *feel* in their hearts, that '*in God they live and move and have their being.*' This conviction is impressed and rivetted in their minds so as never to be for a moment obscured ; nor does this belief produce in them, the slavish fear which so naturally leads to a gloomy superstition ; neither does it produce any tendency to that enthusiasm which expends its fires in the fervid and useless blaze of ecstasy. It is productive of the feelings of reverence, and gratitude, and love, with a sense of the divine protection, which inspires courage and confidence in the practice of every duty.

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The *peculiar characteristics* of the methods of Pestalozzi, are simplicity and truth : simplicity in the mode of inducing the mind to be instructed, to seek for knowledge ; and to make the impression on the mind truly, and not ambiguously, nor imperfectly. Whatever is thus inculcated is no longer necessary to be repeated, it becomes an indestructible part of the stock of rational ideas, which fade only with the decay of life.

Connected with these principles of simplicity and truth, are *the modes and means by which the business of education, is insensibly prosecuted without restraint, or vexatious force* ; knowledge is acquired by means which assume the appearance, and carry all the gratifications, of recreation. In a word, the mind is led, without perceiving the delicate film which is proved to be competent to conduct it ; the health is preserved by the exercises which enter into the modes of instruction, and the constitution is at the same time strengthened ; while the mind is enlarged, and the temper secured in habitual contentedness and cheerfulness.

This general view of the method, does not depend on the authority of books ; it is the fruit of observation and experience. The benefits of the system have been tested by thorough experiment.

In the particular branches of instruction, the *eye*, and *ear*, and *tongue* of the pupil are all engaged in a manner adapted to each subject ; and the several subjects follow in an unperceived order, adapted each to sustain either some previous study, or to prepare for that which is to come. The usual *lessons* for children of five or seven years old, are the knowledge of the names of the members and parts of the individual. A book especially adapted to this first class of instruction, and called '*The Mother's Book*,' is published ; it forms a part of the tuition of the school, because although mothers usually teach their children to know their right hand from their left, and their fingers from their thumbs ; yet even this mother-taught knowledge is itself defective ; and men grow up in years, frequently, without the knowledge of the proper names of many other parts of their bodies, unless some professional pursuit renders the acquisition indispensable. When mothers shall have obtained the accurate knowledge of the book that bears this title, of course it will no longer be necessary in the school.

Associated but by succession, with the knowledge of the person, is the knowledge of interior forms and objects ; those

which present themselves to the sight, which make an impression on that sense, but which require to be analyzed, to render the impression distinct, and discrimination durable. This method is here manifested in all its perfectness and beauty ; and the latent sparks of intellect are drawn forth with an effect that produces in the pleasures of an hour, principles of knowledge, which employ the labour and study of years. Erroneous ideas are thus barred out by the prepossessions of intellectual light and truth. Thus, for example, if the objects to be seen, are trees, houses, rocks, or animals, how are those different objects so discriminated from each other as to assign to each its proper name ? By a question this is soon brought forth. It is discovered that every object has a form ; and another question discovers that all forms have an exterior line, and that this line compared with the exterior line of another object, is the first sensible difference. It is discovered that houses are composed in their exterior forms of straight lines, generally ; that rocks are composed of mixed lines ; and that animals, besides being of different forms, have also the principle of life, of which as care is taken to prepare the mind, further notice is to be taken.

These exercises produce new questions on other visible properties of objects ; among these *colours*, and *lights*, and *shades*, are touched upon ; *height*, *extension*, *magnitude*, grow out of these inquiries ; and curiosity leads the teacher to try his hand in describing some object by lines on a slate, or a prepared board ; many castles are built in the air, and as speedily demolished ; trees are described ; and it becomes necessary to discriminate the difference between kinds of trees ; for the same kind of lines will not describe the oak and the pine ; and to discover other peculiarities affords an occasion for a ramble in the fields, when the first impressions of *natural history* are made by comparing plants, leaves, barks, branches, &c. The first elements of *geology* are formed in these *unpremeditated* walks of sport or innocent pastime : insects, and fish, are introduced to the mind by inquiries suited to the state of the little philosopher's knowledge.

But it is after the return from these rambles, that the hand is led to trace the impressions of the mind, and to discern that practice is necessary to the production of lines of any form at will. The fundamental principles of *geometry* commence their initiatory course at this moment, when it is perceived that lines have proportional lengths in symmetrical bodies, and that it is

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necessary to describe in oral language, the length, the direction, inclination, or position of a line. The exercises on the principle of forms are begun by drawing a line of an inch in length, and thence lead to the proportional quantities of all measures.

In the system or method of Pestalozzi, the declared object of the author is to follow nature invariably. Every operation, therefore, is *analytical*. Education commences in the arms of the mother, before the child is deprived of the sweet fountain from which its existence is drawn. The first accents of the voice, are the first lessons of speech, the names of the earliest objects of attention, affection, or desire, are the vocabulary lessons ; and the course of maternal cares and cautions, lays the foundations of the future mind, its rectitude, its amenity, its good temper, its recreations, and its predilections. For these reasons it is, that the sagacious philosopher considered that '*The Mother's Book*' should be the first prepared, and the first studied. This book he intended to become the companion of the nursery, and the agent by which maternal affection should regulate the development of the faculties of her child. He perceived that due attention is not paid to the effect of early impressions—that the received modes of education are at once embarrassed by the variety and incongruity of infant impressions ; and that the first appearance of children of either sex at school, is too frequently afflicting and embarrassing to the first teacher that succeeds the parent. This book is therefore calculated to aid and direct the tender mother, or when she has not, through any cause, performed her part well, to aid the successor of the parent to do that which she has not done, or was not capable of doing.

This mode of education may be very properly denominated *physical*, for it excludes every thing but what is natural and sensible to the perceptions of the understanding ; and permits none of the unmeaning practices to which infant years are accustomed generally, either through the faulty education of parents, the ignorance of nurses, or the customs of society in relation to them.

The teacher is to be governed entirely by the degree of information, or apprehension of the pupil. Classes are formed of the same age, or of nearly the same age, governing the classification more, by capacity than by years. The mother is presumed to have had charge of the child till the commencement of the sixth year ; or, incidental causes requiring it, to

seven or eight ; but the first classes should not be much short of the first, nor exceed much the latter period.

This method above all things requires *sweetness of manners, mildness, and kindness in the teacher* ; as the regulation of the passions and the deportment, has the greatest influence on human happiness : cheerfulness and good nature must produce corresponding habits, when there are no cases which excite fear, resentment, or severity. Coercion, severe forms or restraints, or painful or disgusting associations, are totally excluded. Truth is the point to which all eyes are turned, whatever may be the subject of conversation, or exercise ; whether it relates to animals or inanimate objects, or facts which become subjects of inquiry, of common transactions, or the exercises of investigation : for the teacher appears only as an inquirer ; and although he, unperceived, gives direction to the inquiry, the skill of the teacher aids and persuades the pupil to examine and develope the truths sought. The teacher is himself possessed of determinate ideas and fixed principles ; but as those acquirements are the result of application, it is forbidden him to state principles of an abstract or complex nature, until by a regular progression from facts unknown to facts that are known, the first investigations combined in results developed by examination, the principle is itself unfolded, as a resolved principle.

Truth is in this way identified with physical certainty, and morals are aided by a common reference to sensible things. Morals gain strength by association with the truths of numbers, of geometry, and the peculiar lines which characterize and distinguish forms of sensible things. That one and one make the number two, is a truth, as much as that virtue and sincerity are admired and beloved ; and that a circle is round, the properties of angles constantly the same, though every angle that varies from another, is not similar to that which differs. So in assigning names, those of colours, signify different shades or lights, the true name is the signification of the term by which all agree to understand what is denominated green, and blue, or yellow ; and the idea of error, or untruth is also defined, by giving the name of one colour to another, such as calling black by the name of white ; which would be as absurd as to say a horse was a cow, or a river a whale ; or that a stone was bread. In this way a devotion to truth is indulged, and while it is better defined, the grossness of falsehood is avoided ; and its absurdity is a rational idea, is brought in aid of its incompatibility with goodness or virtue.

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The instructor takes for his guide the four known principles of Locke.

1. *That knowledge is derived by sensation.*

2. *That the exercise of the faculty of thinking, and discriminating between the effects produced by sensation, is called mind.*

3. *That the action of sensation and mind, is wrought into judgment by comparison, and by the framing of analogies with ideas previously known ; that fancy, imagination, reflection, and reasoning, have their sources here.*

4. *That history, which is the testimony of other persons, constitutes a great portion of our knowledge ; and that the sciences are the result of experience, or the bequests of ingenious men to posterity.*

Cleanliness in person, wholesome and sufficient food, early evening repose, and rising before dawn, are indispensable regulations of the school. Cleanliness is enforced by exclusion from the class, not by the teacher, but by the vote of the pupils ; early evening retirement, by example, and the extinguishment of light, at a stated hour ; a pupil in turn calling the roll : the early rising is promoted by emulation, in which the teacher is also a competitor.

The first exercise is a *gymnastic exercise*, regulated by the state of the weather ; if fair and clear, it leads to an hour's inspection of natural history : the trees, the shrubs, the flowers, plants of use and beauty, are examined, and compared ; the teacher is not seen in teaching ; some one or other has a given tree, has noted its bark, its trunk, its branches, its leaves, its fruits ; several are compared with each other ; their vulgar names are repeated, and their classic names remembered by the teacher, if none of the boys have previously ascertained them ; collections of plants are made, and a roll of coarse paper, which some one happens to have in his possession, sets some active mind to work, and calls forth a number of emulators. Others have perceived rocks, or pebbles, or earths ; these are examined, and the teacher recollects an interesting account of these things ; gives some definitions ; and promises to read an account of them ; thus *geology*, *mineralogy*, and *botany*, are studied in the book of nature, and ideas are imperceptibly imprinted on the pure tablet of the mind to endure for life. These recreations are varied, mineral curiosities are collected ; and, in due time, the analysis of their composition by means of acids, leads to the elementary principles of *chemistry* : but the

process is not precipitate : all knowledge that is intermediate must be first attained.

The hour of exercise in the fields expired, the health invigorated, prepares the appetite for breakfast, where order, silence, and decorum prevail ; the breakfast is soon despatched ; and a half hour's recreation in the open air, prepares for the *exercises of the class in school*. Instead of books, each pupil is furnished with a large slate, and a pencil in a crayon carriage. If the exercises are the drawing of any kinds of figures, writing, or algebraic operations ; if simply arithmetical operations, or fractions, the eye, the voice, and ear, alone are exercised. But these lessons do not follow a fixed routine, though there is method in their succession, which no teacher can fail to understand. The exercises in school rarely exceed an hour and a half ; the prolongation is usually the consequence of any appearance of inattention ; a recreation is proposed in the open air for this interval, which may exceed a half hour or an hour, but which a well known signal certainly terminates, when a new branch of exercise is prepared. The teachers of the several classes having taken their stations in any part of the room, the pupils are seated on benches ; before each is a desk ; and the eyes of all are directed to one point. The recreation of the morning, or some cheerful sallies from the teacher preface the exercise, when he commences questions on some object of their walk, to ascertain the correctness of their observation.

As truth is the *object* of Pestalozzi's system, true and correct ideas are sought ; the particular modes of speech are not so much attended to, as clear, and appropriate terms ; yet purity of speech is never disregarded ; and whenever occasions present themselves of accidental errors of speech, or of inappropriate or erroneous terms, opportunity is taken to inculcate a lesson on *orthography*, or *syntax*, or on *grammar*, according to the degree of prior attainments in the pupils of the class. This course is desultory, and may appear irregular ; but it imitates the diversity of real and natural life. *It assumes new forms, arising out of the nature of circumstances, and the state of feeling in the pupil*. Thus if the ideas of things, or the senses, become heavy, the mind is led to the ideas of elevation, extension, or magnitude ; to the height of a wall, or the length and breadth of a field.

The ideas of forms are first presented, as discriminated by outlines ; regular figures, space, extension, magnitude, induce inquiries, which all result in the necessity of referring to first

principles ; and the properties of lines are sought and developed. This exercise is, without being so announced, the first element of several branches of education—it leads to *writing*, to *geometry*, to *drawing*, and to *description*.

It is easy to imagine, by a little reflection, how unbounded is the use of the knowledge of lines, and how easy it is therefore to start an inquiry. The teacher asks how long such a fence is ; and there are various guesses. The rule which he carries in his pocket, enables the pupils at once to measure a foot, or to cut a stick to a yard or fathom, and ascertain the truth.

X It is a very remarkable fact, that the system developed by Pestalozzi bears, in its principles and its methods, as close and particular a resemblance as any two objects can, to the earliest modes and forms of education, of which history gives any account. In the school of Pythagoras, mathematics preceded every other study ; and *the knowledge of things, was the preparatory exercise to the knowledge of words*. Thus the fact, that all sensible objects are defined by an outline, which we express by the words shape, form, or figure, distinguishes every object from every other. The properties of magnitudes, or forms, as to length, or elevation, or bulk, are indefinite and unascertainable, without the use of numbers to express degrees of quantity, and a standard to which numbers are to be applied, in the expression of different qualities. In the common modes of education, the knowledge of these facts is confined to general, not to exact expressions ; the height of one object is referred, not to a common standard of quantity, but by comparison, to some other objects of which the resemblance, and not exact quantity, is understood. If, then, all our ideas of sensible objects which have relation to forms, or magnitudes, are loose and general—mere guess work—it must be obvious, that the studies which are conducted without first acquiring accurate ideas of the quantity of magnitude, or the standard of measure, must be embarrassed and equivocal ; because it will frequently happen, that the defects of guess work will be detected, when any incident requires reference to exact measure. In the school of Pythagoras, the mathematical classes preceded those of natural philosophy ; and the reason is obvious. Plato, in a subsequent age, excluded from his lectures on philosophy, those who were ignorant of geometry ; and there is a memorable saying of the philosopher Xenocrates to a person, who being ignorant of geometry and arithmetic, appeared at

his lectures ; ‘ Retire,’ said the philosopher ; ‘ you have not found the key of philosophy—or the cup of philosophy has no handle for you.’

Whether Pestalozzi caught the ancient modes from the study of these great men’s principles, or invented them anew, is not of so much moment as the *truths* by which his principles are governed.

ART. II.—*Du Perfectionnement Moral, ou de l’ Education de Soimême ; par M. Degerando, Membre de l’ Institut de France. Seconde Edition, revue et corrigée. A Paris. 1826. **

THE true method of educating the young cannot be discovered, without a previous knowledge of what the human being may do for himself. The work of M. Degerando is therefore of great importance to teachers of youth ; for the principles of self cultivation constitute the art of education—in other words, the method of assisting others to help themselves. And why is it, that self cultivation, founded on true principles, is so little thought of as a subject of study ? Is it not that there are some false maxims prevalent on the subject, harmonizing but too well with that love of ease, which is one of the principles of the human constitution ? Because moral *perfection* is represented, (and most justly,) by the voice of revelation, as a simple state of soul, has it not been too hastily assumed that *moral progress* is simple ? May it not be, that in saying moral progress is the consequence of the directions of conscience, the word conscience deceives us, and because it is a single word we think it is a simple thing ?

It is certainly true that moral progress is the consequence of the directions of conscience ; but it is an obvious, as well as fatal misapprehension, to suppose that moral progress, considered relatively to the sophisticated mind, (as it should be in order to apply to the case even of the best and most enlightened,) is simple. Conscience is not an existence within us, independent, simple, absolute. On the contrary, how much is

* To this work was awarded the honour of being ‘ crowned ’ by the French Academy,—a distinction annually conferred on one or two works, deemed the most useful that have been published during the year.

included in that word conscience ! how different are the ideas it conveys to different individuals ! how different to the same individual, at different stages of character,—even supposing him at all times to have been most deeply penetrated with the love of goodness and virtue !

Were conscience really the '*voice of God*,' independent, absolute, and pure, it would never lead to what is wrong ; and yet, even in the popular view of conscience, it is not only the '*voice of God*,' but it is, also, very frequently, *mistaken, unenlightened*. These vague notions are productive of much mischief : as the '*voice of God*,' conscience has been the weapon of the presumptuous ; as *only mistaken*, the refuge of the convicted. Against the erroneous and pernicious associations attached to this word, and to a vast many more, employed on moral subjects, especially in common conversation, nothing will avail, but more precise views of moral science generally diffused. The subject of M. Degerando's work touches the case in hand.

Conscience, as the etymology of the word implies, means a consciousness of all that is within, of the relation of all the laws of the internal world to the accomplishment of destiny, with all the relations borne to other beings, and the duties resulting from these. When this consciousness is complete, intellectually and morally, then the conscience may be a safe guide, may stimulate a uniform and sure moral progress, and *not till then*. Then it will never lead but to right action, and then a mistake in practical morals will not be virtually charged on the deity. But the principles of conscience are all which we receive by inheritance from our Creator. It must grow enlightened, and it will do so only in proportion as we pursue general self cultivation, founded on an analysis of the intellectual and moral powers,—the true philosophy of the mind.

It may be said, that if this is the case, then no man can keep the path of rectitude, for none know all that is to be known of the mind, all the relations of its faculties to each other, and all their bearings. And, absolutely speaking, even the best men have never kept the path of highest rectitude : it is true they have approached more or less near to keeping it ; they have acquired more or less soundness of conscience ; and, as to the failures, in the counsels of a Father's love, there is a counterbalance to all necessary deficiencies,—*pardon*—the grand, and characteristic feature of revealed religion.

It was, perhaps, because the parental character of God, and the doctrine of pardon, had not been revealed to the sublime sages of Greece, that, in their speculations, they aimed to find the '*summum bonum*' of human destiny, even among the disturbing forces of this lower world. They reasoned justly from their data. They looked upon nature, and saw that every individual of material creation, carries within itself the law of its own being, and might attain the height of its nature ; and consequently they supposed the directing power within man, to be something absolute. But although man was evidently superior in some points, still it was not possible for the consciously erring to dare the thought that human nature was too high to come under any of the analogies of things material ; that man, alone, was in his Father's house ; that material nature was his plaything and servant ; that *the Father* has many mansions ; and that what seems necessary evil, when the fragment of our being is looked on, which we call human life, may be found the condition of moral freedom, when the whole is taken into view. The ancient philosophers, therefore, could only save themselves from the evident contradiction of ascribing injustice to the supreme Being, by shutting their eyes on certain facts concerning human nature, and in some instances, calling evil, good. It is from them that has been derived the doctrine of an unerring guide in the mind, absolutely independent of all its other faculties, rather than the result of their united action, the '*slow product of laborious years.*'

But this error, so natural—let me add, so sublime in them, has remained as a clog upon us, who have no reason to shrink from looking our infirmities in the face ; since the '*spirit of truth*' has come from our Father, to free us from '*the bondage of fear.*' Why should children not examine their patrimony ? Why not look upon all its fearful dangers ? Why not acknowledge all its most perplexing facts ? It is only thus that we can be enlightened ; and could we but attain a truly enlightened conscience, which must be the result of self cultivation on right principles, we should not find it, like the popular conscience, degrading the beings whom it professes to guide, supplying excuses to the erring, and arrogance to the bigoted. There would still be left enough in the doctrines which lead to a Father, and the consciousness of pardon, to give sweet confidence to virtue ; while the beauty of contrition, that '*fears to have offended,*' would spring out of this view of conscience,

and almost consecrate, (but still not confound with virtues,) the very infirmities of the sincere.

To those who seek the true principles of self cultivation, M. Degerando has given a valuable assistance in the work now before us. In his first chapter he states his subject ; and as it forms a synopsis of the work, we will give it entire, and leave to another opportunity some remarks we have to offer on his peculiar views.

‘ The great work of man’s education commences under the most sacred and benignant auspices. Providence seems to have taken it upon itself, by confiding it to the heart of a mother : it is the gift of watchfulness and love.

Let infancy rejoice at its weakness and feebleness, since they obtain for it the happiness of being under such tender and faithful protection in childhood ! Many individuals have hardly any other education than the maternal ; it continues a long while in many, by means of the salutary and profound influence which a virtuous mother exerts over her children, and which is more powerful than any other. Blessed are the mothers who really understand this noble prerogative with which they are invested ! Happy the children who are allowed long to reap the benefits of it ! All ages might find in this education of the cradle a model and a subject of study, for the directions they need, and yet do we think of studying it ? The pupil learns the use of his senses, and the exercise of his faculties : he is taught also the use of two things which will help him to learn all others : he acquires language, and he learns how to love. Afterward comes, under the direction of tutors, that artificial education which should be the continuation of the preceding ; but which seldom preserves its spirit. With the direct instructions of masters are mingled others less perceptible, yet more powerful, perhaps, and more lasting, such as those which the youth receives from his ever increasing intercourse with others, particularly his companions, and such as he receives from circumstances. This second education is so much the more profitable, as it trains the pupil to act for himself, and thus favours the progressive development of the gifts that he has received from nature. So far as it prepares him to study and improve, it educates him ; but it does not give him science and virtue ; it only puts him in a situation to discover the one, and to love the other. It then calls for his own cooperation, which becomes more important from day to day, in pro-

portion as his strength increases, and his experience is enlarged. At last tutors retire ; and in the eyes of superficial men, the whole education seems finished. Yet the means alone are changed ; and, under its new form, it acquires peculiar importance and usefulness, at this third period. To external succeeds spontaneous education ; or, rather the internal education, which, secretly, having seconded, more or less, the education received from without, renders it efficacious, and remains to influence the rest of life. This free activity, which till now has cooperated with the instruction of masters, left henceforth to itself, invokes and acknowledges a new guide, reflection. Doubtless the young man, when he enters upon the world, may abandon himself to the empire of circumstances and of his passions, and trust to the habits he has formed ; then the career of perfection will already be closed upon him, he will not have attained its end ; but unfortunately for himself he will have prematurely prescribed himself a boundary ; he will have resigned the prerogatives of youth ; he will only perceive its extravagancies, delivered up as he is to disturbing forces, whose effects he cannot discern, and whose influence he cannot regulate. Then may a sincere and friendly voice arrest him a moment from the vortex which would hurry him away, warn him of his error, make him understand that he is responsible for his future happiness, that great duties spring from the liberty he possesses, and teach him the importance of that decisive epoch upon which his destiny depends ! If, at this era, when he becomes the arbiter of his own fate, he throws a searching glance into himself, what an unexpected view opens before him ! Under what a new aspect life appears, which till then he had hardly experienced ! He stops, he hesitates ;—astonished, he interrogates the universe, his destiny, and himself. A thousand mysteries appear to him which agitate and terrify him : nevertheless he desires to sound their depths. The more extensive the circle of the ideas he had acquired, the more multiplied are the problems he has to solve. At the same time, he feels the necessity of some sure foundations which may support his reason. The more honest his heart is, the more deeply he feels the need of being convinced of the precepts which are to preside over his conduct and secure his happiness. Among the questions that arise out of this last order of investigations, there are none more natural or important than these : “ For what end was I placed upon earth ? What are the means I possess for reaching that end ?

What method must I pursue to accomplish it ? ” In this career, upon which he eagerly enters with conscious strength, but which as yet is concealed from his eyes by a cloud, he seeks what he may hope for, he inquires what use he is to make of the activity which consumes him . Then may the example of a good father be to him an instructive book ! or let the young man obtain an experienced friend, who, without giving him precepts, may receive his confidence, have communion with his heart, and lend support to his rectitude !

The happy moment from childhood to youth is the time to lay the foundation and understand the system of spontaneous education ; but it merely begins self cultivation, which must continue to the last hour of our existence. “ The life of man is in reality but one continued education, whose end is perfection,” is a fundamental truth which solves all the problems that agitate the youthful heart, and trouble growing reason,—a truth which rectifies and regulates every thing in our earthly career ! This is the answer he sought ! it explains his doubts and agitations, while it satisfies him. Man is not only called to govern himself, but to provide for the time to come. Each of his actions exerts an inevitable influence over those which follow. Every step carries him forward a degree in his career. He must be enlightened by experience, and strengthened by exercise. There are some men, who, in a moral point of view, do not really become great till their maturity. There are some who in old age are still youthful in virtue. Every one may improve even at these periods of life. There is an education as long as there is a future. The moment of commencing the race of perfection is alone fixed ; its goal is not fixed. There are some individuals whose best days are their last. Far be from us, however, that presumptuous delusion which would conceal our weakness, and lead us to place too much confidence in the success of our efforts ! The habitual trial that we make of our strength, will soon convince us of our error. But this very trial will be a light to guide us out of our presumption, and give us more prudence. Besides, who knows what a sincere and enlightened will may bring forth from the least favoured beings, if it be exercised with firmness and indefatigable perseverance ? It is astonishing to see how regular and continued activity in simple mechanical labours, will produce effects that seemed quite impossible ; we pause with just surprise before that kind of *chef d'œuvre*, as it is called, which is nothing but the proof of unwearied industry. How

much more real would be the masterpieces, produced by him, who would apply the same regularity and faithfulness to his moral exertions ! If we should always ask ourselves before acting, what it is best to do, and if we always did as well as we could, would there be any limit to our capacities ? Every new day, bearing in its bosom an unknown future is a true creation of providence ; why should not we also render it new by its fruitfulness ? How many times a single day has changed the destiny of nations ! How many great thoughts and noble resolutions even a single hour has brought forth ! From the soil which we tread under our feet in our blind course, another would produce the creations of genius and virtue. One man whose character inspires us with just admiration, perhaps would not have deserved our esteem, had he not made more effort than we dare attempt : another, whose degradation afflicts us, only neglects himself, and resigns the power he possessed of doing good. Even when a man has fallen into the mire of vice, he can, by a generous resolution, again recover the dignity of his being. There are unknown powers in each of us, which repose in a kind of sleep, whose existence we do not suspect : some unexpected circumstance, a great misfortune, a deep affection, a great example, perhaps a great fault, or an hour of meditation, will suddenly reveal to us the mystery. We are then surprised to discover to what a height we were permitted to aspire. A new world seems to be unveiled to us in the depth of our hearts. But our attention is soon diverted ; the torrent hurries us away ; the veil falls ; the great discovery is forgotten ; we remember it only as the illusion of the moment, perhaps as a regret that may embitter our life. Oh ! would that we followed this sacred inspiration ! It might possibly decide the character of our whole existence.

The most finished education, given by the most capable masters, very often produces indifferent effects. Self education alone raises men above the vulgar : the character of great men is always partly their own work. When we speak of the *vulgar*, we do not mean the obscure ; we hope to be better understood : by vulgarity, we mean lowness of character and sentiment, in a moral point of view. Moral perfection, (and this is a fundamental remark,) consists not in producing extraordinary men ; most of these men acquire their prerogative by sacrificing some condition that is essential to improvement or happiness. Much less do we pretend to require men of moral elevation to seek an eminent situation in the world, from whose

height they might attract attention, and exert a powerful influence. True perfection is that which may be found in connexion with the condition and destiny of every one ; and consequently, for men in general, it is what suits the most ordinary occasions. It consists in a complete and harmonious combination of the intellectual and moral faculties, either with themselves or with the circumstances in which each is placed ; and for this reason, it often strikes the spectator less ; it does not excite his surprise : every thing appears simple, because every thing is ordered. It may then be said that this perfection is, in part, relative ; it is but conformity to the vocation to which we are called. There is a moral grandeur in every condition, whose value is increased by obscurity ; and whose highest degree dwells with the virtues that are least worldly : as there is often a littleness in situations which men consider most elevated, that makes the external glory and favours of fortune still more apparent. The perfection of one's self, so far from being a prerogative exclusively reserved to some, is a career which is open to all,—open to the humble and unnoticed, in preference perhaps to him who is distinguished. We do not attain it by going out of our station ; but by conforming to it ; and the less aid and the more obstacles we meet with, so much the more real merit we obtain. O ye, whoever ye may be, who precede us, leaving us the inheritance of your noble examples, ye who walk in our presence with a firm and secure step in the path of goodness, while we languish in an effeminate and idle existence, why should we not be called to follow you ? Is the description of your lives only to charm our idle moments, to produce effect upon our dramatic scene, or to draw forth empty praises ? Endowed with the same nature as yourselves, called to the same ends, creatures of the same God, why should we not aspire to share your destiny ? Why should we not ask what we may be, and why should we not attempt to realize it ?

Man has unfortunately the faculty of deteriorating as well as of advancing. Placed between an ascending ladder and an abyss, it depends upon himself whether he mount the one, or be more or less drawn towards the other. Now the means of attaining perfection, are the same as those which prevent or raise us from degradation. Even those, then, who, prepossessed with gloomy opinions, discouraged about human destiny, and doubting the power of virtue, would accuse us of yielding to seducing illusions when we adopt the view of infinite per-

fectibility, will find principles of action whose usefulness they cannot dispute in the sentiments we present to their meditations ; and self education will seem to them also the only method of preserving the gifts our nature has received from providence.

Hitherto, in considering human life as a great and continual education, we have concentrated our attention upon the course of this life merely. The thought acquires new grandeur and dignity, if, looking upon the destiny of man in its full extent, and from a more elevated point of view, we glance over that unlimited future, which philosophy promises, nature reveals, and religion warrants.

This very faculty of a progressive, continuous, and infinite perfection, furnishes an argument as powerful as it is legitimate, in favour of a future to which it refers, and of which it is the herald. These are the two terms of a magnificent relation. Since man may always improve, there is always a higher existence that awaits him ; since he has the expectation of a higher existence, he must continually improve. The virtues acquired in old age are the germ of a second youth ; they are like those flowers, preludeing a new spring, which are found under transient frosts. The more we reflect upon the numerous mysteries which constitute our temporal existence, the more plainly do we see that they are evidences which prove this life to be a preparatory state, and therefore it is a long and painful trial to most men. This trial is a pledge. Education is so much the more laborious, as it should be more useful and effective. If we bestow so much care upon that whose fruits will only last a few years, and may wither by early death ; what attention, what efforts should we not lavish upon that whose fruits will endure eternally ?

Children of earth, we make immense provision for a short and uncertain voyage ; children of heaven, how much more should we provide for the abode of immortality ! What value, in this view, does the period of maturity acquire, too often considered as a period of enjoyment,—an enjoyment how unsatisfactory ! and even the period of old age,—thought to be only a time of repose—a repose how troubled ! They have been judged only in their relation to the past ; but when considered in relation to a future development, they become more fruitful continually ; the evening which closes the day, preludees the morrow.

Philosophers have justly remarked that the only real instruction is that which the pupil draws from his own resources ; that true education is not that which transfers opinions already formed, but that which renders us capable of forming good opinions ourselves. What they have said in this respect of intellectual faculties, is equally applicable to moral faculties ; as there is an *auto didactic* culture for the intellect, so there is a spontaneous cultivation for the soul, upon which all real progress in excellence depends. We observe with eager curiosity the proceedings of those ingenious and various arts which supply our material wants. Should we be indifferent to the secret process of that wonderful art which creates truly distinguished men, performs the mighty work of happiness and virtue, and clothes the world with its most beautiful decoration, by elevating human nature to its highest dignity ? We must penetrate the secret mind of the good ; they must become our study ; that we may learn if our principles have been proved by them in their actual experience ; and while we feel that we have employed all our efforts in deriving knowledge from them, may we prove ourselves worthy of being their interpreter and organ !

If this art, which is the first, on account of its generality as well as its importance, can be really reduced to practical rules, these rules ought to be within reach of every one, as they are designed for every one's use. Therefore they ought not to be merely adapted to those privileged beings, whom nature has endowed with eminent faculties, and who have little need of directions, which they find in their own inspirations ; they ought to be accommodated to common weakness ; they ought to enlighten the first steps, (which are often the most difficult,) of those who undertake their own improvement. They should also rest essentially upon facts which belong to universal experience. They must consequently be founded upon familiar truths. Far from rejecting familiar truths, as generally known, we should rejoice to find them received and approved by all. If each one appoint himself a judge of them, he will be so much the better able to prove their truth and apply them to himself. It is a noble prerogative of moral truths that they are founded upon general consent, and are, as it were, the conscience of the human race. Let us beware of divesting them of this prerogative ; they would become less sublime and less useful, by ceasing to be general. Besides, these rules should agree with diversity of opinions, at least so

far as these opinions accord with the interests of virtue ; they should be as free as possible from all systematic theory ; not, that the beautiful and lofty speculations which embrace both the principles of duty and the cause of moral approbation, may not be one of the most important subjects for meditation ; but by uniting this order of speculations with the precepts of an entirely practical art, we run the risk of compromising the latter, in the eyes of those who may not have leisure or courage to judge of such controversies. And farther, according to the opinion of those who have most thoroughly examined them, such is happily the result to which we are led by the comparative examination of different theoretical systems, that the counsels of wisdom, inspired by rectitude of heart, are confirmed. The authors of these systems, after having differed in speculative considerations, arrive nearly at the same practical results, with this single difference, that the scale of virtues and motives is different. We are perhaps authorized to conclude, therefore, that the truest and best of all systems is that, which without excluding any, acknowledges in each something useful, wisely combines them, or censures whatever is incomplete, defective, or exclusive, in either.

There are, however, certain fundamental points which it is necessary to establish, or rather to remember, so as to place them beyond dispute. In the study of the phenomena of moral life, of the development it admits of, and of the means proper to hasten it, it is well to understand the conditions upon which it exists, and the elements of which it is composed, so as to decide upon what it is capable of becoming. Moral life has not less reality than the life we call physical, and it has a vast preeminence. Its reality is even known with greater certainty ; we know physical life merely from its effects, as we know bodies merely by their surfaces. But we know moral life by the testimony of our inward conscience ; it is given us to search the depths of our hearts. In scenes of moral life, the soul is at once actor and witness. It is this history of the internal man which is to serve as a prelude to self education, because it teaches both what the materials are upon which this labour is spent, and what instruments are used : it will be drawn from internal experience, more sure than the experience of the external senses, since it is founded upon immediate intuition ; although it may be more delicate and difficult, because it employs no aid but reflection,—a slow faculty, and restrained by a thousand obstacles, in its earthly flight. This short summary

constitutes the first book of the treatise we have endeavoured to sketch.

This preliminary study will lead us to perceive, that if our inclinations and actions are the general subject which moral perfection embraces, its two principal springs are love of goodness and self government, two powers that make up the whole moral man ; one determining purity of motive, and resting upon disinterestedness as its essential condition ; the other rendering us capable of acting from the best motives, and taking for granted that man not only has power, but authority over himself ; one directs to the end, the other furnishes the means.

This being granted, we shall first examine how, from the exercise of these two great powers, results all the good there is in us, and how the degree of their application is the measure of the merit and demerit of human actions ; and how it is the measure of the estimation granted them by the judgment of the wise. We shall at first see them act separately and by turns, in so far as they can be separated ; afterwards we shall see them unite and combine ; for it is upon their association and their perfect harmony alone, that all moral perfection depends. Finally, we shall inquire in the third and last book, what is the most suitable method of cultivating these two great powers, to give them the highest degree of energy of which they are susceptible, and to preserve that harmony between them which is equally necessary to both. Thus will be completed the views we wish to offer upon self education, views which indeed embrace but a small portion of this important subject.

We shall thus be naturally led to seek some remedies for the principal moral diseases that afflict humanity, and particularly, perhaps, in our age ; one disease is that egotism which isolates men, rendering them strangers to one another, loosening or destroying all the bonds of affection, and concentrating individual exertion into a search after pleasures ; another is that weakness of character which makes men slaves to blind imitation or to their own inclinations. Happy will it be, if, at an epoch when so many circumstances seem to call society to deep morality and solemn destinies, when the dignity of human nature seems to be better understood, we lend our feeble aid to heighten this dignity, and keep alive the sacred flame of noble and generous affections !'

ART. III.—*Historical Notice of M. de La Salle, and of the foundation of the Brethren of the Christian Doctrine.**

[Translated from the French Journal of Education.]

WHENEVER attention is drawn towards a new institution, some voices are raised in its defence, and others oppose and find fault with it, either through ignorance, or from the common fear which innovation of whatever kind generally inspires. A benevolent society, influenced by the purest motives, was formed with the design of increasing and improving upon the good that others had done before it ; but immediately its object was supposed to be the destruction of existing institutions, that new systems might be substituted in their stead, established upon secret foundations, and having a tendency to subvert received principles. Yet several names of authority were given as a pledge to public opinion, and should have prevented these unjust imputations. So far from wishing to destroy anything, this society offers to those who have taken upon themselves the honorable task of doing good, the possibility and means of extending their benefits to a greater number of the indigent, who all have equal claims upon benevolence. Perhaps some remarks on the foundation of these invaluable 'christian schools,' which have rendered such important services, and whose usefulness, we hope, will continually increase, may not be read without interest, in a work published under the direction of the Society for Elementary Instruction. By reflecting how many obstacles the founder of these schools met with in the execution of his pious design, the friends of the new method will acknowledge, that good institutions, like truth, always encounter opposition and detraction ; but, with the help of time and of facts, triumph, at last, over the ineffectual efforts of ignorance and prejudice.

Jean Baptiste de La Salle, son of a counsellor of the 'presidial' court at Rheims, was born in this city, on the 30th of April, 1651. Educated in pious sentiments, he was distinguished, from his earliest infancy, by his religious zeal, and a marked predilection for sacred things. As he grew older, these inclinations became stronger. Insensible to the pleasures of the world, he was never happy unless in the service of God, and in the exercises of worship. As soon as he arrived at years of dis-

* See American Journal of Education, Vol. III. p. 123.

cretion, his vocation was decided upon, and he devoted himself to the church.

M. Roland, prebendary of the cathedral of Rheims, was his preceptor. A good man, and an ardent and enlightened philanthropist, M. Roland felt the necessity of preserving unfortunate youth from corruption and ignorance. With infinite trouble, he succeeded in establishing a community of instructresses, whom he destined to be the apostles of this holy work. Death prevented the execution of his charitable project, and the man of God, when quitting the world, bequeathed to his disciple the accomplishment of his apostolic purposes.

M. de La Salle soon felt the weight of the burthen he had taken upon himself, when he saw the innumerable troubles and difficulties and obstacles that arose in opposition to the progress of the new institution. But he found in his religious zeal, in his love for the unfortunate, and in the remembrance of his virtuous preceptor, a courage and strength of soul, that enabled him to surmount them all. Three things were requisite to secure the existence and extension of the association,—the approbation of the city, and of the archbishop, with letters patent.

It was only by unwearied exertions, solicitations, and eloquent petitions, that the worthy prebendary succeeded in obtaining them, and in conquering all the prejudices that assailed him. In a short time, the institution grew, and was firmly established; and he thus happily finished the work that was begun by his predecessor.

M. de La Salle had, at this time, neither the design nor the wish to establish 'christian schools' for boys. He had thought, more than once, of the necessity of founding establishments of the kind; but he saw so many difficulties in the way, after those he had met with in the establishment which we have just mentioned, that the thing appeared hardly possible. A particular circumstance enlightened his zeal, and gave him courage to attempt the enterprise.

An extraordinary woman, the wife of M. de Maillefer, master of accounts at Rouen, after passing a part of her youth in the midst of a brilliant world, and in the bosom of pleasure, fell suddenly into an excess of devotion, which formed a striking contrast with her former life. The extravagance of her penitence, and the strange ways in which she expressed it, made her, for a long while, appear mad; but, at last, those who had laughed at her conversion, began to think her a saint. Madame

de Maillefer had great confidence in M. Roland. She had often conversed with him upon the necessity of establishing free schools for boys, like those which already existed for girls. The death of the prebendary made her neglect the project for some time ; but she never abandoned it. Madame de Maillefer was born at Rheims, and she desired to procure this precious benefit for her native city first. When M. Roland died, the pious lady sought for some one who might take his place to execute her design, and at last she thought of M. Adrien Niel, a native of Laon, a man about fifty five years old. This skilful and insinuating man, possessed all the qualities requisite for such a difficult undertaking, in which there would probably be so many perplexities to encounter. He was besides very well acquainted with the object of his mission, and had already kept school at Rouen. Madame de Maillefer settled a pension of an hundred crowns upon him, to provide for his subsistence and that of a little boy, fourteen years of age, who accompanied him. With this security, M. Niel set out for Rheims, supplied with letters to the Superior of the Sisters of L' Enfant Jésus, and to M. de La Salle, who was a relation of Madame de Maillefer. When he arrived at the place of the community of instructresses, he found M. de La Salle there, gave him the letter from his relation, and told him the motive of his journey. This letter and this conversation, awakened all the ideas of the young prebendary. He felt the importance of this work more than ever ; and he decided upon a plan to secure its success, notwithstanding all the obstacles he was aware he should encounter.

He at first offered his house to M. Niel, that he might conceal his designs more effectually, and shield them more securely from malevolence.* He then disclosed himself to the curate of St. Maurice, M. Dorigny, whose zeal and humanity he knew; and this worthy pastor consented to lend his name to the school which was established in his parish. This was the surest precaution to oppose an insurmountable barrier to the efforts of ignorance and prejudice. It was not, however, without trouble, that they succeeded in conquering them ; but the curate, having a right to instruct his parishioners, no one could prevent the establishment of a school that was formed under his auspices. Thus, notwithstanding all difficulties, the first free ' christian school ' was opened and governed by M. Niel, 1679.

* The opposition encountered by this undertaking originated in the fears and suspicions of the priesthood.

M. de La Salle, satisfied with this happy success, thought for a moment that he had finished his mission ; but he was called to accomplish a greater work. M. Niel was enterprising and full of plans ; his active and industrious zeal was well adapted to stir up the wiser and more prudent mind of M. de La Salle. It was then the director of the first school, who, without thinking of it, gave rise to the institution of the 'brethren of the christian doctrine,' founded by M. de La Salle ; and this was the occasion of it.

Madame de Croyères, a widow, rich and without children, animated with the true spirit of charity and benevolence, desired to establish a free school for boys in the parish of Saint Jacques, at Rheims. M. Niel, informed of this design, hastened to the lady, accelerated by his insinuating arguments the accomplishment of a project that was so conformable to those he had in view himself, and engaged this lady to confer upon it with M. de La Salle, whom he named to her as the protector and promoter of these establishments in the city. Madame de Croyères saw the prebendary, and made an agreement with him to secure a fund of five hundred livres of annual revenue, for the support of the new institution. The school in the parish of Saint Jacques was consequently opened without any obstacle, in the same year, 1679, in the month of September. The number of children increased with incredible rapidity, and it was also necessary to increase the number of masters. There were five with the curate of Saint Maurice, and M. de La Salle was charged with their payment and support. Several inconveniences soon arose from the increase of masters, who were subjected to no rule. Having no guide but their own will, there was no uniformity in their management; each one taught in his own way, and the result was a sad confusion in the methods of instruction. M. Niel, on the other hand, carried away by his zeal, and breathing only for the establishment of new schools, was necessarily often absent, which was very prejudicial to the superintending care with which he alone was charged. This active and restless man was very unfit to direct a community. M. de La Salle then felt the necessity of devoting himself to this laborious management. He had already thought of it several times ; but he felt so great a repugnance to it, that he had always repulsed the idea. Let it be considered how much virtue it required in a head of a family, a good parent and friend, and in a man accustomed to the conveniences and charms of life, to resign himself to share his house and

table, and to live, indeed, far from all his kindred, with unpolished and uncultivated men, without conversation, and without society ! Let it be considered what courage it required to make the sacrifice of his dearest affections, to resolve to separate from his three brothers, with whom he had always lived, to rise above the opinion of the world, and the calumny of which he was soon to be the object ! Religion and love of humanity could alone render a man capable of consummating such sacrifices and braving such contempt. Wisdom, and a prudent fear of undertaking a task beyond his strength, made him hesitate a long while. A new circumstance, (which will be mentioned hereafter,) made it necessary to sacrifice himself irrevocably, and at last to put the final seal to his pious and charitable work.

M. de La Salle was thus undecided about the course he should take to maintain and manage the first establishment of the 'brethren of the christian doctrine.' He had brought them near him by settling them in a house next his own, and had subjected them to some regulations. But he saw with sorrow that these regulations were not well observed, and that the frequent journies of M. Niel interfered with the discharge of his duties as superintendent.

M. de La Salle felt the necessity of being nearer still to the brethren, and of living in common with them, so as to make sure the foundations of his invaluable institution, by directing it himself ; but his whole nature revolted from the idea of so painful a sacrifice. A particular circumstance put an end to his hard struggle, and triumphed over his repugnance.

The mayor and aldermen of the city of Guise, hearing of the success of the free schools at Rheims, requested M. Niel to establish one in their city. This proposition was so conformable to M. Niel's inclinations, that he accepted it with transport, and without considering the inconveniences attending it. M. de La Salle in vain represented to him that the time had not yet come to extend the benefits of the institution ; that by leaving the nucleus of the society which existed at Rheims, to go after new establishments, he might forever ruin an enterprise so happily begun. But the ardent M. Niel listened to nothing ; he set out on his new mission ; and his departure obliged M. de La Salle to resolve to send for the schoolmasters to take their meals with him.

From that moment, the prebendary began to watch with his own eyes the execution of his regulations, which he made some-

what more strict. When he saw the brethren easily accustom themselves to order, under his superintendence, and speedily change their management and methods, he concluded that the inattention and absence of M. Niel had been the only obstacle to this improvement ; and he decided that he would finish the work himself, by securing it upon its basis with his own hands. In 1681, he determined that the schoolmasters should take up their residence in his house. M. Niel, on his return from his unsuccessful mission, joined with them, and lived also with M. de La Salle.

It was then that the pious prebendary needed supernatural courage to rise above the clamours of the world, and resist the reproaches of his family and friends. But he was prepared for all. He had considered upon the consequences of his step, and when resigning himself to it, he felt within his soul strength sufficient to brave all reproach, and support every humiliation. The most indecent jests about the kind of people with whom he associated, and about the pretended alienation of his mind, furnished subjects for the conversation of the whole city. He was accused of bad intentions and dangerous designs ; for calumny always seizes upon the purest and most honourable purposes, so as to prevent their success. At last, those who called themselves his friends, were satisfied with pitying him and his whims.

But he had to bear the rudest attacks from his family. All his relations forsook him with marks of indignation and contempt. They had the cruelty to take two of his brothers away from him whose youth he had guided. One remained with him, notwithstanding all the efforts that were made to force him away, and wished to share his pious and charitable labours.

M. de La Salle deeply felt these wounds ; but he had foreseen every thing, and he was resigned, seeking consolation in the thought of the good he was called to do. Having become more independent from these very persecutions, he resolved to quit his own house and go with the masters to one which he hired, at a sufficient distance from the cathedral. This was truly the cradle of the institution ; and the house remained in possession of the brethren, after the purchase that was made of it in 1700, by the liberality of three charitable persons.

Established in his new dwelling, and enjoying perfect liberty, M. de La Salle devoted himself to regulating his little flock, and gave it the form of a community. He was not slow to perceive, however, that several of his disciples wanted courage

to resign themselves to so regular a life, or capacity to accomplish the task imposed upon them. He was therefore obliged to dismiss a great number, but their places were soon filled by more resigned, more devoted, and more capable persons. It was not till then, that is towards the end of the year 1681, that the institution could be considered as organized. Thus renewed, and directed by all the wisdom of the virtuous prebendary, it grew rapidly, and improved every day, so that great hopes were conceived of it. After being an object of contempt and disdain, the establishment and its founder acquired great reputation, and attracted the attention of all the cities in the kingdom. So true it is that good institutions triumph at last over the efforts of malevolence and prejudice. What a noble recompence, after such great sacrifices ! What a noble recompence for the worthy founder to have several cities ask him for masters to establish schools in them ! In less than two years, schools were formed, by missionaries from the original establishment, at Rethel, Guise, and Laon. Yet M. de La Salle was extremely circumspect and prudent in replying to the many demands he received. He felt how many disadvantages there would be in sending people who were unqualified ; and he was very careful in the choice he made of the masters who went from the community.

Notwithstanding so much precaution and wisdom, such happy success was not obtained without obstacles and opposition ; but the cause of humanity always triumphed. M. de La Salle, not satisfied with the sacrifices he had already made, wished to give his disciples an example of that humility which was so necessary in the exercise of their pious and difficult office. He parted with his prebend, sold his estate, and distributed the profits to the poor ; descended to the poverty of his disciples, and joined with them in all their privations. This was but little : he laid down his authority, stooped from the rank of superior, and obliged his disciples to choose another in his stead. But it was not without great difficulty that he succeeded in making them consent to this change. All his eloquence, and even a little address were required to induce them to determine upon it. But if self love commonly employs so much art to deceive, humility is sometimes not less ingenious to attain its ends. He succeeded in his design ; and brother Henri L' Heureux was chosen to fill his place.

Having descended to an inferior rank in a society whose founder and father he had been, M. de La Salle, became an

example of submission, humility, and sublime virtue. But this action drew upon him the sarcasms of the world and even of the clergy, who, shocked with the subordination of a priest in the presence of mere brethren, required him to resume his rank, which he was obliged to do, to the great joy of brother L'Heureux.

It was about this time, that M. de La Salle conceived the idea of establishing a seminary for children who were destined to enter into the community of the brethren. A little while after, he made a journey to Paris; and the good he was tempted to do there, drew new persecutions upon him. Having sought to introduce a little more regularity into the schools of Saint Sulpice, he became an object of hatred to their superintendent. Exposed to the most odious calumny from that suspicious man, he came near being sent back to Rheims with his brethren. But he, always undisturbed in the midst of such storms, sustained and guided by the love of goodness, succeeded in opening the eyes of the curate of this parish, and in destroying the dangerous effects of calumny. He even obtained permission to establish new schools in the parish; and this was another cause of trouble. The schoolmasters regarded him as a man who had come to complete their ruin, and sued him at law. But his zeal and courage enabled him to rise triumphant above this unjust and shameful persecution.

Thus, till his death, he had all kinds of obstacles to struggle against, in the execution of his charitable work.

Continually employed in confirming his institution, enlightening authority, securing particular interests, opposing purity of intention to calumny, elevation to contempt, and light to prejudice, his whole life was devoted to make sure the success of an establishment which has since had such happy results and extensive influence. We will not follow him farther in his apostolical career. We only wished to make the principal circumstances known, which brought about the creation of an order to which society is under such obligations. All we could say upon the further progress of this religious association, would add no interest to the history of its foundation. We send those of our readers who desire to have more circumstantial details upon this subject, to the source whence we drew those we now offer them.

It was just to pay a tribute of praise to this respectable society, and to point out the name of its virtuous founder to public

gratitude. And where could this homage, rendered to the virtue and philanthropy of this hero of humanity, be more properly placed, than in a work designed to make public the labours whose design is to perfect and improve the important work of education ?

ART. IV.—*Education of the Female Sex.—Self Observation.*

[Resumed from last No.]

IF the characters of young women were formed on the christian model, if their minds were enlightened on the important subject of self control, if their piety induced habits of self examination, and religious principle imposed due restraints on the language and conduct ;—in short, if they zealously and habitually sought to bring the temper and feelings into order and proper subjection, and tasked themselves to the daily and hourly duty of acting out the beauty and symmetry of the precepts of our Saviour ; even though they might not extend their views so high or so wide in search of duty as to look forward to the maternal state, and consequently might continue ignorant and prejudiced on the subject of infant education ; yet the evils caused by these deficiencies would be greatly mitigated, and counteracted, if not subdued. Passion would not then, as is too often the case, impel to a revengeful infliction of chastisement, even if prejudice should persuade them that chastisement was necessary : it would be done by such persons temperately ; and the pain it would give the parent, would be evident to the child, and take from it half its agony and all its anger, from the conviction that would be produced of the punishment being inflicted from a sense of duty, and not from inclination. Impatience would not induce such persons, to snatch in haste and violence from the infant, what was deemed hurtful, or too precious to be handled ; nor would angry vehemence be manifested on every trivial instance of disobedience, though ignorance of the true methods of mental development might cause a failure in regularly conducting it. In a word, that gentleness, patience, forbearance, kindness, generosity, sincerity, order, and indeed every christian quality which should be inculcated by example as well as precept, being in constant exercise, half the business of infant education,

and the best half, too, would be performed without any philosophy about the matter, but merely in uniformly acting on established principles of personal duty. When we consider that infants and young children are ignorant of every thing, and that being so, they naturally believe those older than themselves, do always what is right and praiseworthy : it follows of course, that they studiously imitate all they see done, and repeat all they hear said,—with a very close adherence to the voice and manner, and even exciting themselves to feel the passions which accompany the actions and language they witness.

It appears evident, then, that we should say and do, and exhibit in manner, what we wish to have copied by our children, and enforce the observance of this rule, on those to whom we entrust them. And while we instruct them by direct rules and precepts, we should deepen the impression on their minds, and engrave it on their hearts, by observing in our conduct and language, the principles we wish to give them. It is equally evident, also, that if what is done and said before the child, is always the dictate of right principles and corrected feelings, the same effects will follow, in kind, if not in degree, whether such words and actions were expressly intended for the child's good, or were the effect of habitual correctness without any reference to duty. Thus it not unfrequently happens that young mothers of very moderate capacity and limited knowledge, but naturally of a calm and gentle temperament of mind, whose passions are not easily excited, nor violent on any occasion, by virtue of this native constitution of mind are enabled to bring up their little ones, with much less trouble to themselves or their children, than is experienced by many parents of much finer intellect, and more ardent desire to conduct the education of their children in a perfect manner. This different success in family management has been very generally observed, and also that to excel in the art does not always accompany superiority of mind, or intensity of interest on the subject ; and the general conclusion therefore is, that the successful management, and correct government of children, is a gift of nature, enjoyed as often by inferior as superior minds ; and that if there is no genius for it,—if nature has denied the power,—it is in vain to aim at it. But if those instances were critically analyzed, I am bold to say, that in every case the only genius, or special gift of nature, would be found to consist in that habitual moderation and gentleness of feeling, that inexcitability of the nerves, and steadiness of temper, which

some people are blessed with by constitution; and which always having the full use of what reason and experience is possessed, and moderating the wishes and expectations respecting children ; while it tempers the conduct towards them, ensures success in the preservation of peace and good order, and in promoting domestic happiness. Though the powers of mind are circumscribed, and knowledge is not possessed on the subject, nor prejudice overcome ; yet the designs of nature are not meddled with in the children ; their tempers are not irritated, nor the original and individual powers of development interrupted or frustrated ; and the result is delightful to the feelings, if not entirely satisfactory to the desires, of minds of a high order. If the education of children, under such circumstances, is not all that we can wish, at least it is correct as far as it goes ; and if they enjoy fine natural powers, it affords them the best chance of self improvement.

It is a mistaken notion that superior talents, or very high attainments in knowledge, are requisite to govern and instruct young children successfully and correctly. This persuasion induces many to abandon the attempt as unattainable, or to give up the object as too laborious. It is an error of timid minds—which are perhaps even better endowed in other respects, than those of many who make greater pretension, and feel well qualified for the task ; but whose ignorance and prejudice constantly lead them wrong.

As we see no animal in creation which is not gifted by God with the the skill necessary to rear its young, and to instruct it in all its appropriate actions ; so it is believed few human beings are denied talents sufficient for the purposes of all needful control and tuition of those helpless and devoted creatures whom providence throws into our arms for guidance and instruction, as well as for shelter and protection. Let no parent, then, be discouraged ; especially let every young mother, though timid and solicitous, be enlivened by hope, and strengthened by faith, that she will succeed in her efforts for duty. Let every young woman exert her mind and awaken her zeal, however humble her talents and confined her previous education may have been, and whatever be her station in life ; still let her be encouraged to a devoted study of her own character,—a thorough examination of her temper, and habits of thought, and course of conduct, with a pious wish and determined prupose, of reforming all she finds wrong, confirming all that is right, not alone for her own sake, but also to prepare

herself to undertake the management of those immortal beings, which it may be the will of Heaven to commit to her care and guidance. Let her be assured that early infancy is the period when the deepest impressions will be made ; and then will those associations be formed, which will render easy or otherwise every succeeding step in education.

Whoever has had the patience to peruse my previous numbers, must before now have formed some conception of my idea of the kind of character a woman should possess, in order to the proper discharge of her maternal duties. Let the imagination for a moment picture a community where the young women were thus judiciously prepared to enter the matrimonial state ; let the idea of the universal prevalence of correct notions on the subject of infant management, portray all classes of people exhibiting in their domestic establishments that order, neatness, regularity, kindness of conduct, gentleness of tone and language, that uniform integrity and perfect law of love, which it should be the principle and habit of every mother to display in her own life, and form in her children ; and where, the whole code of christian morality and piety, should be manifested in humble and unaffected sincerity ; and yet with just discernment and wise forbearance, and kind allowance for the very imperfect knowledge and thoughtlessness of infant minds ; banishing every harsh measure, every irrational expectation, and unjust chastisement ; where single and plain, but insinuating appeals to the understanding and feelings of children, mingled with explanations of duty, and the reasonableness of obedience should gradually form habits and principles of virtue ; where experience of little errors should be called in aid of precept, and example enforce all law ; where liberty should be regulated, but not destroyed on one hand, nor usurped on the other ; where, in short, all things should be calmly, wisely, and kindly conducted. Let all this be contemplated in idea ; and then ask, if there can remain a doubt that such a state of things would, for confusion, turmoil, misrule, anarchy and misery in domestic life, substitute order, tranquillity, harmony, and happiness ? Would not the improvement manifested under such circumstances in scenes of private life, in due time be extended to all departments, even of church and state ? Is it possible to calculate the valuable results of so beneficial a change in domestic arrangements and family government ?

When reflecting upon such improvements on a large scale, so much benefit is perceptible, that we immediately contrast it

with the present state of things, perfectly incredulous that we can ever arrive at so happy a period. It is a Utopian plan, and can never be realized, will be the ready observation of every one. That such a universal change for the better can be soon accomplished, it is not pretended : all great and thorough alterations must be extremely gradual. But as nothing is required in any individual, more than every individual would be entirely competent to perform if properly instructed and disciplined in duty, with prejudices, removed and zeal excited, and rightly directed ; there is no reason in nature why this desirable state of things should not become universal ; nor why in time less or more distant according to the zeal and energy and wise measures used to establish it, the whole community should not exhibit so lovely a picture of female influence. It is knowledge which is wanted ; but it must be the right kind of knowledge ; it must be practical ; it must be the knowledge how to do and say the right thing, at the right time, and in the right manner,—instruction from birth to maturity, in the things which belong to our peace ; in correct notions of true happiness, and its real sources. Let these be provided, and the light will soon spread, and will not fail to bring forth its own fruits. Under such circumstances women might cease to rule so despotically over the passions of men ; they might cease to desire to engage in discussions, or influence the decisions of men in affairs foreign to their peculiar departments ; they would probably rather desire to retire, more than at present, from such fields of action, and prefer to confine their operations within the circle of their peculiar duties ; yet it cannot be doubted that all these important subjects would still partake of the benefit of such wise regulations and happy circumstances. Men who had been reared by such mothers, who had associated with such women, had enjoyed the blessing of such wives,—who had felt the delightful influence of such domestic peace and good order,—would without doubt, possess minds better qualified for calm investigation, rational discussion, and elevated views. Integrity and honourable dealing, sincerity and cordial friendship, unaffected piety and true religion, would increase and prevail, to the manifest well being and happiness of society. Thus all classes would have reason to rejoice, that at last women had attained their true station and just rank in the opinions of men, and in the society of which they make a part. Having been cruelly degraded in all barbarous states of mankind, debased under all heathenish customs and superstitions, unduly and

unnaturally exalted in the chivalrous ages of passion ; it remains for times of rational improvement and plain common sense, to place her where God designed her to stand, by the side of man as his companion, adviser, and friend. This will be effected by providing the means and qualifying her to fill the station with dignity, propriety and zeal.

I shall now close my series of desultory but practical remarks ; to which, if purity of motive, sincerity of profession, and earnestness of feeling, can secure attention and induce reflection on the subjects noticed, I shall not fail of reaping in some measure the desired reward for my labour. If, in addition to this, I have been successful in my attempt to rouse even a single female to an active engagement in the path of duty, if I have stimulated any to study herself and her responsibilities, or excited a resolute intention to qualify herself for them, from such a beginning, small though it be, much good may eventually grow. If even these desired effects should not be granted to my efforts, I may have been successful in stirring up higher and wiser minds to look into the subject ; and if it be only to controvert my opinions, let intellect be at work in this field, and light will be elicited ; spirit will rise, and knowledge will be imparted. I shall have joy at least, if by my means—or any means, attempts should be made to advance that long neglected cause, a just estimation of woman's influence, and efficient methods of rightly directing it. There is still great need of another series of essays, examining the detail of infant management and instruction ; pointing out the errors which universally prevail ; and showing the correct principles, rules, and methods to be observed, by all mothers, in all stations of life. If no better aid is offered than I can afford to the rising generation, by the experience and reflection time and circumstances have given me, I shall again call upon the indulgent public for their serious and candid attention.

ART. V.—*The Two Books of Francis Lord Verulam. Of the Proficiencie and Advancement of Learning, Divine and Human.* London. Pickering. 1825. 8vo. pp. 402.

THE general state of public sentiment in relation to an author, has an important influence in determining the manner in

which his writings shall be received. It operates, not merely before the examination of a book, by the expectations which are created by the name of the writer, but it remains with us while we read, and acts as a kind of interpreter to all that he says. It may be replied, indeed, that all this is as it should be. That it is but the sphere and influence which every man's inherent character necessarily creates; and as we cannot move but it will surround us and give notice, like a herald, of our approach, so we ought also to be willing that it should announce our rank and quality as well as our name. All this is doubtless just and true. But there is also a morbid sensibility of public sentiment, which is exceedingly injurious to an author, and of real benefit to no one. Indeed it is injurious to those who are under the influence of it, as well as to the author; for it leads to false rules of criticism and false estimates of merit. Though the fault to which we allude is often exhibited in the too common prejudice against every name which is 'to fame unknown,' yet that is not the form of it of which we now complain. Nor is it the hasty avidity with which all the productions of certain authors are read, and the indiscriminate praise with which they are received. Though these are sore evils, they yet seem to be surpassed by that servile obsequience which bestows habitual praises even upon what it has never seen. If an author is deeply wronged by the lavish and unqualified approbation of those who read but to admire, and blend his faults with his beauties into an image, which though splendid and dazzling, is also fantastical, what shall we say of him who is doomed to be admired without being read at all? We cannot honour an author, nor even treat him with common justice, till we read and understand him. All our preceding admiration was but an exhibition of self complacency. We were not admiring the author, but were infatuated with the contemplation of our own *beau ideal*.

We have made these remarks with a view of doing what we can to cause a more thorough and general examination of the writings of Bacon. It is too often assumed that their day is past, and their use accomplished. We acknowledge him as the father of the inductive system, and our great master in philosophy. But we often destroy all the benefit of this acknowledgment, by departing too early from his guidance, and setting up as masters ourselves. Let us not be misconstrued. We would inculcate implicit reliance upon no human authority. But if it be well to learn some truths from Bacon, why not

well to learn more, till we have received all that he has to communicate? If it be well to acknowledge him as a teacher of philosophy, is it not better to acknowledge ourselves to be his pupils, and prove ourselves in earnest by a careful examination of his writings?

In our last number we gave a hasty sketch of the origin and character of inductive philosophy. The particular object in view was, to show the influence of the true mode of philosophizing upon the human mind. If this could be distinctly and intelligibly done, a most important point in the science of education would be gained. For it would disclose the true origin of the principles of education, and direct them towards the attainment of their only legitimate end—the rational discipline and culture of the human mind. It must be obvious that we now use the word education in its most extensive sense, as being applicable to persons of all ages. It is sometimes regarded as needful only to the young. And in this false understanding of the true meaning of the word, the erroneous systems we would oppose, find no small portion of their support. We have but small skill in the science of etymology, and but little confidence in its general results. But though it may do but little in determining the true signification of words, it will not unfrequently produce a happy effect in causing their true signification to be remembered. On this account it may be well to be reminded, that *educate* is derived from a Latin word which signifies to *foster* or *cherish*. When applied to the mind, it signifies to afford suitable nourishment for the unfolding and development of its powers and faculties. This is as needful after we have reached maturity, as before. We do not mean to say, that there are not certain common, universal principles which are rightly made the study of the young. We would not dispense with schools, nor make any very essential alterations in the catalogue of their studies and pursuits. It is with the mode of teaching that we have to do. If this could be thoroughly reformed, the objects of inquiry would arrange themselves in their true order, almost without our aid or cooperation.

Let us make a single further remark in illustration of our meaning. The question is often asked, whether a child be old enough to commence a particular science or branch of study. Now if the true order of teaching and learning were once established, this question would be superseded by the question, whether he *could* commence it. So long as we have the truth to teach, and are willing to teach it according to the rules of

order, the only limit we are to regard is in the ability of the learner to receive it. And this is a limit which we can neither remove nor overcome. This, however, only renders it the more important that the teacher should be able to perceive where this limit is. For though, if the teacher disregard it, the pupil will be protected from all direct injury from his attempt to communicate what is at present unintelligible ; yet this will neither compensate the one nor the other for their mutual loss of time and temper. While we have artificial modes, not of transplanting knowledge and truths to take root and grow, but of transferring them to be laid up for use in their present state and form, we shall have occasion for the order which results from artificial arrangement. He who introduces into the stomach, that which he knows is not to be digested, can receive no aid in determining what quantity or quality will be safe, from a knowledge of the powers and process of digestion. But he who introduces nothing but wholesome food, would need to be governed by a knowledge of nothing else. Or the mind may be compared to a garden or a field. If we fill it with fruits already ripened, or timber already grown, we may provide indeed a temporary supply ; but we shall cumber the soil with an injurious load. But if we sow it with seeds, and stock it with young plants, the quality of the soil will determine the quality of the growth which it is able both to produce and to sustain.

We dwell upon this point, and perhaps repeat more than we have occasion, not because we regard our views as new, but as important beyond what is generally supposed. We observed, before, that inductive philosophy had scarcely yet been introduced into its proper sphere of operation, our primary schools. It is important that this be effectually done, that the mind may become early habituated to an orderly and rational mode of receiving truths, and of arranging what it receives. In this point of view the propriety of using the word education in a more extensive sense, will be readily seen. The powers of the mind are developed by the reception of truths, which shall live and grow, and produce fruits and seeds in their turn. A man may be said to be educated, then, in proportion as he has learned how to receive and adopt truths into his own mind. And he is qualified to educate others, in proportion as he understands truths in this way himself, and has learned to respect the same rational freedom in his pupils. In all this we are but saying what Bacon has said before.

'For as knowledges are now delivered, there is a kind of contract of error between the deliverer and the receiver: for he that delivereth knowledge, desireth to deliver it in such form as may be best believed, and not as may be best examined; and he that receiveth knowledge, desireth rather present satisfaction, than expectant inquiry; and so rather not to doubt, than not to err: glory making the author not to lay open his weakness, and sloth making the disciple not to know his strength.

'But knowledge, that is delivered as a thread to be spun on, ought to be delivered and intimated, if it were possible, in the same method wherein it was invented; and so is it possible of knowledge induced. But in this same anticipated and prevented knowledge, no man knoweth how he came to the knowledge which he hath obtained. But yet nevertheless, "*secundum majus et minus*" (according to greater and less,) a man may revisit and descend unto the foundations of his knowledge and consent; and so transplant it into another, as it grew in his own mind. For it is in knowledges as it is in plants: if you mean to use the plant, it is no matter for the roots; but if you mean to remove it to grow, then it is more assured to rest upon roots than slips: so the delivery of knowledges, as it is now used, is as of fair bodies of trees without the roots; good for the carpenter, but not for the planter. But if you will have sciences grow, it is less matter for the shaft or body of the tree, so you look well to the taking up of the roots: of which kind of delivery the method of the mathematics, in that subject, hath some shadow; but generally I see it neither put in use nor put inquisition, and therefore note it for deficient.'

It may be necessary in explanation of a few peculiar phrases which may occur in our quotations, to state that the form of the book is that of a letter or address to the king. Its object seems to be set forth with sufficient clearness, for our present purpose, in the concluding paragraph of the introductory chapter, which we give in the author's own words.

'Therefore I did conclude with myself, that I could not make unto your majesty no better oblation, than of some treatise tending to that end, whereof the sum will consist of these two parts; the former, concerning the excellency of learning and knowledge, and the excellency of the merit and true glory in the augmentation and propagation thereof: the latter, what the particular acts and works are, which have been embraced and undertaken for the advancement of learning; and again, what defects and undervalues I find in such particular acts: to the end, that though I cannot positively or affirmatively advise your majesty, or propound unto you framed particulars; yet I may excite your princely cogitations to visit the excellent treasure of your own mind, and thence to extract particulars for this purpose, agreeably to your magnanimity and wisdom.'

In the conclusion of this paragraph, we have, as it were, the rudiment of the whole work, if we substitute for his majesty, the human race. The object seems to have been to excite

inquiry, and give rules for its successful issue. The reader cannot but be deeply impressed with the conscious strength and ability, with which the various subjects of science, and learning are passed in review and receive their awards. Their characters are canvassed, and their claims are disposed of, with the air and dignity of one who has long been familiar with the rules and duties of the bench. And as might be expected before such a tribunal, many branches of knowledge are found wanting, or in the quaint language of the author, are 'noted as deficient.' Still he ever seems to keep his grand object in view. He does not labour to surprise by his originality, and dazzle by his wit, but to define the paths of science—to show the world how they may become grounded in the true principles of science. In this connexion, the following paragraphs which occur near the close of the book, as showing at once his own idea of what he had done, and his bright anticipations of the future, are too remarkable to be omitted.

'Thus I have concluded this portion of learning touching civil knowledge; and with civil knowledge have concluded human philosophy; and with human philosophy, philosophy in general. And being now at some pause, looking back into that I have passed through, this writing seemeth to me, "*si nunquam fallit imago*," (as far as a man can judge of his own work,) not much better than that noise or sound which musicians make while they are tuning their instruments; which is nothing pleasant to hear, but yet is a cause why the music is sweeter afterwards: so have I been content to tune the instruments of the muses, that they may play that have better hands.

'And surely, when I set before me the condition of these times, in which learning hath made her third visitation or circuit in all the qualities thereof—as the excellency and vivacity of the wits of this day; the noble helps and lights which we have by the travails of ancient writers; the art of printing, which communiceth books to men of all fortunes; the openness of the world by navigation, which hath disclosed multitudes of experiments, and a mass of natural history; the leisure wherewith these times abound, not employing men so generally in civil business, as the states of Græcia did, in respect of their popularity, and the state of Rome, in respect of the greatness of their monarchy; the present disposition of these times at this instant to peace; the consumption of all that ever can be said in controversies of religion, which have so much diverted men from other sciences; the perfection of your majesty's learning, which as a phoenix may call whole vollies of wits to follow you; and the inseparable propriety of time, which is ever more and more to disclose truth—I cannot but be raised to this persuasion, that this third period of time will far surpass that of the Græcian and Roman learning: only if men will know their own strength, and their own weakness both; and take one from the other, light of invention, and not fire of contradiction; and esteem of the inquisition of truth as of an enterprise, and not as of a quality or

ornament; and employ wit and magnificence to things of worth and excellence, and not to things vulgar and of popular estimation.'

The first part of this work is entitled, 'Learning, how discredited.' In this are enumerated many sources of ignorance and error, and the proper remedies are pointed out. Various faults of learned men are also referred to and exposed. Among them, the prevailing errors of the schoolmen are so justly delineated, and at the same time the description affords so fair a specimen of the general style of the work, that we shall extract a considerable portion of it.

'Surely, like as many substances in nature, which are solid, do putrify and corrupt into worms; so it is the property of good and sound knowledge, to putrify and dissolve into a number of subtle, idle, unwholesome, and, as I may term them, vermiculate questions, which have indeed a kind of quickness, and life of spirit, but no soundness of matter, or goodness of quality. This kind of degenerate learning did chiefly reign amongst the schoolmen; who having sharp and strong wits, and abundance of leisure, and small variety of reading, (but their wits being shut up in the cells of a few authors, chiefly Aristotle their dictator, as their persons were shut up in the cells of monasteries and colleges,) and knowing little history, either of nature or time, did, out of no great quantity of matter, and infinite agitation of wit, spin out unto us those laborious webs of learning, which are extant in their books. For the wit and mind of man, if it work upon matter, which is the contemplation of the creatures of God, worketh according to the stuff, and is limited thereby: but if it work upon itself, as the spider worketh his web, then it is endless, and brings forth indeed cobwebs of learning, admirable for the fineness of thread and work, but of no substance or profit.

'The same unprofitable subtilty or curiosity is of two sorts; either in the subject itself that they handle, when it is a fruitless speculation or controversy, whereof there are no small number both in divinity and philosophy; or in the manner or method of handling of a knowledge, which amongst them was this; upon every particular position or assertion to frame objections, and to those objections, solutions; which solutions were for the most part not confutations, but distinctions: whereas indeed the strength of all sciences is, as the strength of the old man's faggot, in the band. For the harmony of a science, supporting each part the other, is and ought to be the true and brief confutation and suppression of all the smaller sort of objections. But, on the other side, if you take out every axiom, as the sticks of the faggot, one by one, you may quarrel with them, and bend them, and break them at your pleasure: so that, as was said of Seneca, "*Verborum minutiis rerum frangit pondera.*" (the weight of his words crusheth small things); so a man may truly say of the schoolmen, "*Quæstionum minutiis scientiarum frangunt soliditatem*" (minute disputations destroy the solidity of science). For were it not better for a man in a fair room to set up one great light, or branching candlestick of lights, than to go about with a small watch candle into every corner? And such

is their method, that rests not so much upon evidence of truth proved by arguments, authorities, similitudes, examples, as upon particular confutations and solutions of every scruple, cavillation, and objection; breeding for the most part one question, as fast as it solveth another; even as in the former resemblance, when you carry the light into one corner, you darken the rest: so that the fable and fiction of Scylla seemeth to be a lively image of this kind of philosophy or knowledge; who was transformed into a comely virgin for the upper parts; but then "*Candida succinctam latrantibus inguina monstribus*" (beneath her girdle all were howling monsters): so the generalities of the schoolmen are for a while good and proportionable; but then, when you descend into their distinctions and decisions, instead of a fruitful womb, for the use and benefit of man's life, they end in monstrous altercations and barking questions. So as it is not possible but this quality of knowledge must fall under popular contempt, the people being apt to condemn truth upon occasion of controversies and altercations, and to think they are all out of their way which never meet: and when they see such digladiation about subtilties, and matters of no use or moment, they easily fall upon that judgment of Dionysius of Syracuse, "*Verba ista sunt senum otiosorum*" (these are the words of idle old men).'

We have here some hints of Bacon's idea of the true uses and dignity of learning. He seems to have been very sensible of his own strong love of it, for he thinks it necessary to apologize in one instance; and expresses the 'hope, that if his extreme love to learning should carry him too far, he may obtain the excuse of affection'; since 'it is not granted to man to love and to be wise.' But whether his love for learning would prevent his being wise, must depend upon the ends for the sake of which he loved it. On this subject we are happy to find so much evidence, as his writings afford, of the purity of his purposes. But this will be best understood from his own language.

'But the greatest error of all the rest, is the mistaking or misplacing of the last or farthest end of knowledge: for men have entered into a desire of learning and knowledge, sometimes upon a natural curiosity, and inquisitive appetite; sometimes to entertain their minds with variety and delight; sometimes for ornament and reputation, and sometimes to enable them to victory of wit and contradiction; and most times for lucre and profession; and seldom sincerely to give a true account of their gift of reason, to the benefit and use of men: as if there were sought in knowledge a couch, whereupon to rest a searching and restless spirit; or a terrace, for a wandering and variable mind to walk up and down with a fair prospect; or a tower of state, for a proud mind to raise itself upon: or a fort or commanding ground, for strife and contention; or a shop, for profit or sale; and not a rich storehouse, for the glory of the Creator, and the relief of man's estate. But this is that which will indeed dignify and exalt knowledge, if con-

templation and action may be more nearly and straitly conjoined and united together than they have been ; a conjunction like unto that of the two highest planets, Saturn, the planet of rest and contemplation, and Jupiter, the planet of civil society and action : howbeit, I do not mean, when I speak of use and action, that end before-mentioned of the applying of knowledge to lucre and profession ; for I am not ignorant how much that diverteth and interrupteth the prosecution and advancement of knowledge, like unto the golden ball thrown before Atalanta, which while she she goeth aside and stoopeth to take up, the race is hindered ;

“Declinat cursus, aurumque volubile tollit,”

‘(She left the course, and seized the rolling gold).

‘Neither is my meaning, as was spoken of Socrates, to call philosophy down from heaven to converse upon the earth ; that is, to leave natural philosophy aside, and to apply knowledge only to manners and policy. But as both heaven and earth do conspire and contribute to the use and benefit of man ; so the end ought to be, from both philosophies to separate and reject vain speculations, and whatsoever is empty and void, and to preserve and augment whatsoever is solid and fruitful : that knowledge may not be, as a courtesan, for pleasure and vanity only, or as a bond-woman, to acquire and gain to her master’s use ; but as a spouse, for generation, fruit, and comfort.’

Many of the uses of learning are also portrayed with much truth and vividness, as in the following paragraphs.

‘It taketh away the wildness and barbarism and fierceness of men’s minds : but indeed the accent had need be upon “fideliter :” for a little superficial learning doth rather work a contrary effect. It taketh away all levity, temerity, and insolency, by copious suggestion of all doubts and difficulties, and acquainting the mind to balance reasons on both sides, and to turn back the first offers and conceits of the mind, and to accept of nothing but examined and tried. It taketh away vain admiration of any thing, which is the root of all weakness : for all things are admired, either because they are new, or because they are great. For novelty, no man that wadeth in learning or contemplation thoroughly, but will find that printed in his heart “Nil novi super terram” (there is nothing new upon the earth). Neither can any man marvel at the play of puppets, that goeth behind the curtain, and adviseth well of the motion. And for magnitude, as Alexander the Great, after that he was used to great armies, and the great conquests of the spacious provinces in Asia, when he received letters out of Greece, of some fights and services there, which were commonly for a passage or a fort or some walled town at the most, he said, “It seemed to him, that he was advertised of the battle of the frogs and the mice, that the old tales went of.” So certainly, if a man meditate upon the universal frame of nature, the earth with men upon it, the diviness of souls excepted, will not seem much other than an ant-hill, whereas some ants carry corn, and some carry their young, and some go empty, and all to-and-fro a little heap of dust. It taketh away or mitigateth fear of death, or adverse fortune ; which is one of the great-

est impediments of virtue, and imperfections of manners. For if a man's mind be deeply seasoned with the consideration of the mortality and corruptible nature of things, he will easily concur with Epicetetus, who went forth one day and saw a woman weeping for her pitcher of earth that was broken; and went forth the next day, and saw a woman weeping for her son that was dead; and thereupon said, "*Heri vidi fragilem frangi, hodie vidi mortalem mori*" (yesterday I saw the brittle broken—to-day I saw the mortal dead). And therefore Virgil did excellently and profoundly couple the knowledge of cause and the conquest of all fears together, as "*concomitantia*" (concomitants).

• "Felix, qui potuit rerum cognoscere causas,
Quique metus omnes, et inexorabile fatum
Subjecit pedibus, strepitumque Acherontis avari."

• (Happy the man whose vigorous soul can pierce
Through the formation of this universe!
Who nobly dares despise, with soul sedate,
The din of Acheron, and vulgar fears, and fate).

• 'It were too long to go over the particular remedies which learning doth minister to all the diseases of the mind; sometimes purging the ill-humours, sometimes opening the obstructions, sometimes helping digestion, sometimes increasing appetite, sometimes healing the wounds and exulcerations thereof, and the like; and therefore I will conclude with that which hath "*rationem totius*" (the greater reason of all), which is, that it disposeth the constitution of the mind not to be fixed or settled in the defects thereof, but still to be capable and susceptible of growth and reformation. For the unlearned man knows not what it is to descend into himself, or to call himself to account; nor the pleasure of that "*suavissima vita, indies sentire se fieri meliorem*" (that most pleasant life, to feel himself daily growing better). The good parts he hath he will learn to shew to the full, and use them dexterously, but not much to increase them: the faults he hath he will learn how to hide and colour them, but not much to amend them: like an ill mower, that mows on still, and never whets his scythe. Whereas with the learned man it fares otherwise, that he doth ever intermix the correction and amendment of his mind with the use and employment thereof. Nay farther, in general and in sum, certain it is that "*veritas*" (truth) and "*bonitas*" (goodness) differ but as the seal and the print: for truth prints goodness; and they be the clouds of error which descend in the storms of passions and perturbations.'

We have already said that Bacon seemed to be conscious that he was labouring mainly for posterity—sounding as it were merely 'the note of preparation.' It is also true that he was well aware that this would prove to many an unwelcome sound. The errors which he exposed, were errors which had long been cherished and loved. The road which he pointed out, was by no means inviting on the first appearance. He was well aware of these things also. And we cannot better

conclude our present remarks, than by quoting the last paragraph of the first part of the book—a paragraph which shows that he anticipated the opposition which he met. Nay, it shows more. It shows the value he set upon the truth, and his disregard of popular applause.

‘Nevertheless, I do not pretend, and I know it will be impossible for me, by any pleading of mine, to reverse the judgment, either of *Æsop’s* cock, that preferred the barleycorn before the gem; or of *Midas*, that being chosen judge between *Apollo* president of the Muses, and *Pan* god of the flocks, judged for plenty; or of *Paris*, that judged for beauty and love against wisdom and power; or of *Agrippina*, “*occidat matrem, modo imperet*” (let him kill his mother, so he may reign), that preferred empire with condition never so detestable; or of *Ulysses*, “*qui vetulam prætulit immortalitati*” (who preferred an old woman to immortality), being a figure of those which prefer custom and habit before all excellency; or of a number of the like popular judgments. For these things continue as they have been: but so will that also continue whereupon learning hath ever relied, and which faileth not: “*justificata est Sapientia à filiis suis*” (Wisdom is justified of her children).’

The subjects of this volume possess, we trust, sufficient interest to justify us in resuming them in our next number.

ART. VI.—*Examples of Questions, calculated to excite and exercise the Minds of the Young.* By Mrs. Elizabeth Hamilton, Author of *Letters on the Elementary Principles of Education*, &c. &c. Salem. Foote & Brown. 1829. 12mo. pp. 67.

THE interrogatory method of instruction is at present in high repute in England. It is adopted in schools and seminaries of every class, and seems to be held as an indispensable item, in the recommendations of the innumerable boarding schools, and private establishments, which help to load the periodicals with their masses of advertising covers. The ‘interrogatory system,’ as it is called, is, in short, at the high tide of popular estimation. That it will continue to hold its present place in public favour, however, is very doubtful. Not that there is any thing radically unsound in this mode of instruction, but rather because it is not fully understood; because it is very generally used without discrimination or reflection, and as an ingenious perfection of mechanical routine, rather than as a method embodying an active and powerful principle of the mental consti-

tution,—that restless curiosity which impels man in the pursuit of knowledge, through all the stages of life, from the wonder and the mystery of dawning thought in infancy, onward to the profound investigations of mature and learned years.

That insatiable thirst for knowledge which forms an appetite of more or less force in every mind, is, if rightly understood and employed, one of the strongest springs of mental developement, and consequently affords a powerful assistance in education. As far as the interrogatory mode of teaching serves to stimulate this propensity, and thence to augment the activity of thought, and carry the mind through a wider range of objects, a great aid is afforded to intellectual progress. But the form in which this method of instruction is usually applied, has, we believe, a tendency to deaden rather than to enliven the mind, and to confine rather than extend its inquiries. The evils to which we allude lie principally in these two circumstances,—that the questions proposed in most books professedly compiled on this system, usually *assume* the point at which the learner ought to arrive by his own investigation; and, what is still worse, that the answers to the interrogation put into the mouth of the teacher, are not left to flow from the scholar's own mind, but are very carefully and minutely printed off beforehand, in order to save him, as it were, the trouble, and the very possibility of thinking at all. This is quenching, not cultivating, the mind. In a word, the boasted interrogatory system is nothing else than the old-fashioned catechism, in which the printed question and answer alternate in regular succession from the beginning of the book to the end, leaving not the least possible space for the introduction of a single spontaneous and original act of mind, either on the part of the pupil or of the instructor;—the whole arranged with so little intellectual skill, that all manner of interest in the succession of the questions is fairly taken away; and, as the final blow to mental exertion, the unintelligible language of the questions, doubly darkened, if possible, by the still less intelligible language of the formal and dogmatical answers: A full exemplification of all these evils in the moral department of instruction, is furnished in the Westminster Catechism; and, to a considerable extent, the same objections lie against all those elementary treatises in the catechetical form, which are compiled by merely slipping in a question between every two propositions of the science on which they are written. In all such cases, the great object of interrogation, the awakening of thought, is lost, by

the mind being forestalled in its operations. Commonly, too, there is another evil in the fact, that the author of the book, in putting it together, (probably from the last encyclopedia treatise on the subject,) has overlooked the necessity of having the language of his book adapted to the capacities of childhood :—we do not mean rendered puerile, but simple and clear, so as to be intelligible, and, at the same time, salutary to the understanding ;—in addition to which, it ought, if possible, to be rich in associations, that it may aid the activity of thought, as well as expand and elevate the imagination. In one word, there is, perhaps, no method so effectual for quelling the mental activity of the young, and nauseating their taste, as that of ‘ exhibiting ’ a succession of set questions and ready made answers, on subjects with regard to which, if we would only let nature have its way, our pupils would be glad to apply to us with abundance of original and ingenious inquiries, brought up from the depths of their own minds ;—the answering of which would always furnish pleasing, and not unfrequently instructive, employment to a teacher of ingenuous disposition.

Interrogation, when employed by an enlightened instructor, is an instrument of great worth, in the cultivation of the mind. But it must be *original* interrogation, devised by the leading mind, on the spot, and adapted to the ever varying exigencies of the young mind that is to be guided by it, as by an invisible thread, along the path of investigation. In teaching, our questions must be ingeniously contrived, and delicately put ; leaving the intellectual powers of the learner free scope, and as much as possible of the conscious strength of self dependence. In not a few of the interrogatory treatises to which we have alluded, the origin of the ‘ system ’ is traced to Socrates ; and the sanction of that great name is unjustly borrowed for a purpose very remote from what can be traced of his method of teaching. It is true that in attempting to guide the minds of his disciples he made no use of didactic discourses or declamatory harangues, but chose the simple expedient of conversation in a succession of questions, the answers to which contained or involved the truth which he was desirous of exhibiting. The pupil’s own mind was thus made the source of his instruction ; and, through the ingenuity of his teacher, he went away self enlightened and self convinced. Here is an instructive example for teachers ; and the spirit of this method would no doubt prove of great service, if applied more faithfully by teachers in modern times, especially when the learner is in quest of moral

truth. But what is there in common, between this truly philosophic method of converting the human mind into its own guide, by developing its noblest resources, and the mechanical expedient of question and answer by rote, in which the learner is not only not required to think for himself, but is actually prevented from doing so? On this plan, it is true, young pupils may be enabled to recite very fluently, and may thus be made to appear to know a great deal; or incompetent instructors may become apparently adequate to the duties of their office. The interrogatory method or any other, is seldom, we trust, resorted to for such purposes as these.

The present popularity of the interrogatory system may be traced to the same source with the ephemeral success of many famous improvements in education, now laid quietly on the shelf. Invention and discovery are the characteristic, (not to say the rage,) of the day; and the wonderful progress achieved of late years in the physical sciences, is no doubt the blameless cause of much of the vague excitement of mind in other directions. The philosophy of Bacon has been but sparingly applied to moral science; and the knowledge of this fact, when taken in connexion with the vast results obtained from the application of that system to the science of material nature, has prepared the minds of even the thinking and the profound for new and great disclosures relating to mental science; while the bare inspection of the progress of improvement in the arts, is sufficient to create in the less enlightened an expectation of proportional attainments in the intellectual world, and particularly in the modes of applying and developing the mind, which form the science and the art of education. The minds of all men have thus become prepared for great revolutions in instruction, by the introduction of more rapid and efficacious methods. A want of something new has been felt. New systems and plans and contrivances have accordingly poured in, in great numbers, —some professedly expeditious, some practical, all easy, and all somewhat mechanical, bearing with more or less distinctness, the stamp of a suspiciously material origin. Some of these methods operate, therefore, with the velocity, and the noise, too, of machinery; and others are found to possess not a little of the evanescent qualities of smoke and steam.

To leave illustrations. The great mistake which seems to have been the occasion of the exaggerated expectations formed of discoveries and inventions in teaching, is this. The sciences which are founded on the properties of matter, have all re-

ceived a full measure of the benefits of patient and watchful induction ; while the sciences which relate to mind, have not had an equal chance in this respect. The great writers on the human mind, have not, with a very few exceptions—acknowledged the laws of inductive philosophy. Add to this the still more formidable obstacle presented in the ever moving, ever shifting mind itself, its wondrous scope of power and activity, the variety and mysterious subtlety of its operations, the almost hopeless multitude of cases in which a faithful induction must be applied, the endless diversities of mental character, and the hindrance arising from the very use of the material expressions and illustrations through which our researches must be conducted and substantiated, so as to acquire place and permanency. Let all these impediments, and more of vast extent and countless number, be but adverted to ; and we see abundant reason for bringing our expectations to a much slower pace, when we permit ourselves to range over the prospect of great advances in intellectual philosophy, or its applications to instruction.

Progress, however, is certainly making, and progress in the true path of careful investigation, in which every step is watched and verified. This is true particularly in regard to elementary instruction, its principles and modes. Many enlightened minds are now directed, in different countries, to this field of discovery. Many are prosecuting the researches begun by Pestalozzi, the great reformer of modern education, because the patient and diligent inquirer at the great fountain head of knowledge on this subject, the mind of childhood—living, instructive, eloquent nature itself.

Mrs. (or rather Miss) Hamilton's book is a valuable contribution to the advancement of instruction ; it is not a 'catechism,' but is founded on the true principle of interrogation,—that of setting the mind to work for itself ; though it is liable to one of the objections already hinted. The questions proposed in the book are not, it is true, furnished with set answers, but they have too much of the character of 'leading' questions. The answers are thus rendered too obvious : the exercise of the pupil's own powers is superseded by the interrogation itself, which is usually put in such a form as to involve or imply the answer. The effect of such methods on the mind is far from favourable. The learner is still left to feel an habitual dependence on the mind of another, which does the work for him, instead of awakening and invigorating his own faculties, and

leaving him the profit and the pleasure of voluntary and self sustained exertion.

Let the teacher enter as earnestly and deeply as he will into the advancement of his scholars, he ought still to contrive to keep himself out of sight, and let the chief effort proceed, and be felt to proceed, from their minds. It is only when testimony or experience is required, that his presence should be recognized. Even when he is putting a question to his pupils, his endeavour should be to make it as indirect as is consistent with the learner's arriving at the point desired. The question of the instructor should, in fact, do no more than start the investigation of the pupil. To the young inquirer knowledge should ever come with all the freshness and delight of discovery, that it may serve to incite and inspire the mind to still higher effort.

Were early instruction guided by these and similar principles, children would never be assailed with such abrupt and arrogant questions as, 'Who made you? What is the chief end of man? How many are ten times ten? What are the diameter and circumference of the earth?'—before the child has ever had opportunity to watch the creation of even a single leaf, or form one thought of his own mind, or one conception of duty, or ever looked, for two minutes together, at a collection of ten objects of any sort, or actually and distinctly compared the magnitude of any two. Nor should we, on the other hand, have such questions as the following proposed to children:— 'Have we, in the glorious works of creation, in the sun and moon and stars, and in the earth, and all that it produces, proofs of the wisdom and goodness and power of the great Creator?' 'When you take notice of the beauty of the sky above, or of aught that springs in the earth, and at the same time raise your heart in thankfulness to the Creator, are you then making a good use of the blessing of sight?' These are specimens selected from the book before us, and form examples of the defect to which we have been adverting. In these two questions is embraced a vast range of magnificent and elevating thought,—the whole world of natural religion. But they are both so contrived as to be answered by the cheap monosyllable *yes*, and thenceforth to be dismissed, as having received their due portion of attention, at least for the time. But topics such as these should never be caught up in this brief and transient way. They should never be approached but with a deliberate and profound attention, such as is naturally given in the leisure

and the innocence of childhood, prompting those deep questions which task the powers of the mature mind for their answer ; and which intimate how early, and with what a penetrating force, nature is at work on the infant mind.

All cursory and summary methods of obtaining knowledge are to be dreaded, not only as preventing by anticipation the gradual advance of the natural process of inductive and patient observation, by which alone the mind can be individually and truly benefitted, but as impairing the vigour and the healthful enjoyment of thought, by substituting an impatient and morbid rapidity of action, utterly inconsistent with the happy consciousness of exertion. By such means the noblest energies of the soul may be worn away ; and, at the period of maturity, education, when it has been conducted on such methods, may prove a very doubtful advantage. In intellectual and moral attainments, alike, it is the individual who has done a little deliberately and attentively and thoroughly, not he who has hurried over the largest space, who is prepared for higher stages of progress.

These hints are not thrown out with the design of counteracting the influence of the publication before us, but rather with the hope of adding a slight confirmation to what is advanced by Miss Hamilton herself, in the way of prefatory caution and explanation, and what is ably seconded in the preface of the American editor.

‘As questions’ (we quote from the Author’s Introduction,) ‘are on this system resorted to, not as expedients to assist the memory, but as means of suggesting new ideas to the mind, and thereby preparing it for comprehending the important truths of religion, every question which is ascertained to be beyond the comprehension of the pupil must be put aside as useless, until, by suggesting ideas more nearly connected with those he is possessed of, the mind has been gradually expanded to the degree necessary for comprehending them.’

‘In the following pages an attempt has been made to form a series of questions on this model. The examples given are, however, by no means presented as being adequate or complete, but merely as affording hints to the instructor concerning the mode of bringing the powers of the infant mind into action, and of exercising those powers. In each description of questions, as they severally apply to the understanding or the heart, much must necessarily be left to the discretion of the instructor, who may omit or enlarge them at pleasure ; taking care, in every instance, to modify the question so as to make it thoroughly understood. With this precaution, teachers, by selecting such parts of the work as appear to them best adapted to the minds of their pupils, may avail themselves of whatever assistance it is calculated to afford in developing the faculties.’

'The "Questions" now republished' says the American editor 'are founded on the principles which Pestalozzi adopted, with well known success, in every part of education. To him belongs the high praise of having followed the indications of nature in the instruction of the young, instead of subjecting their minds to preconceived theories. He observed that the intellectual powers can only be developed gradually, and by a regular series of efforts; and that when a clear idea on any subject is acquired, the idea next in succession is easily imbibed. This idea, moreover, he believed, should not be directly imparted to the children, but should be obtained by their own mental efforts. Instead therefore of obliging his pupils to repeat by rote, words, that suggested ideas to his own mind, he first endeavoured to ascertain the ideas that actually existed in theirs. He then, by *questions* adapted to their capacity, induced them, by a further exertion of their powers, to add to the number of ideas already acquired. The mind, according to his method, cannot be passive in receiving instruction. It is compelled to work its way to knowledge; and, having its activity properly directed, is led step by step, in easy and delightful progression, to the perception of truth. In the ordinary method of teaching, the memory of the pupil is loaded with arbitrary, and to him often unintelligible signs of thought; but in this, he is led to acquire definite ideas, and what is of more importance than even this, to the self-discipline of his intellectual powers.

'To aid parents and instructors in carrying these principles into effect, is the object of the "Questions" now offered to the public. They are intended, not, as is ordinarily the case, to recal or refresh the recollection of what has been already learned; but as the title imports, to "excite and exercise" the minds of the young; to induce and enable them to try their own powers; to think for themselves; and to follow out their own conclusions. If the book has any peculiar merit, it lies principally in this; and to those who believe, with the Editor, in the justness and importance of the general principles above stated, it is confidently recommended.'

The objections which we have ventured to offer to the shape in which many of the questions in this book are presented, are founded, it will be observed, on principles by no means slighted by the author herself, although evidently overlooked by her in some instances. All objection, however, is perhaps superseded in the sentence quoted from the Introduction. 'The examples given are by no means presented as being adequate or complete, but merely as affording hints to the instructor, concerning the mode of bringing the powers of the infant mind into action, and of exercising these powers'

This volume, if used in the manner here prescribed, will prove an invaluable aid to parents and teachers. Viewed in this light, it is a most desirable addition to the sources of early instruction. The editor has, in aiding its republication, done an important service to education. In elementary and Sunday schools, the methods suggested in this work admit of immedi-

ate application ; and there are few manuals better adapted than this, to aid young teachers, in particular ; since it furnishes not only proper subjects for useful instruction, but the best possible form into which a lesson may be thrown, in order to render it interesting and successful, or to give it a definite form without entailing the disadvantages of mechanical routine.

We would earnestly recommend this work, then, to mothers and to all teachers of infancy, but chiefly as suggesting similar methods to what it exemplifies,—not as furnishing a manual for set lessons. Instructors, like all other human beings, are inclined to resort to easy and expeditious methods of despatching their business. As far as this economy of time takes effect without causing a hurried and superficial advancement of the pupil, it is well. But teachers do not perhaps discriminate with sufficient exactness, in all cases, between the saving of time in the saying of a lesson, and the saving of time in the learning of it. The former is very well, if it proceed from skill in the teacher and fluency in the scholar, (on whatever method, old or new, common or peculiar,) but the latter is a very difficult and a very delicate thing. It implies, in the first place, not only high talent in the instructor, but absolutely genius,—creative and inventive power,—and after all may be a disadvantage, by the very despatch which it secures ; since by carrying the mind with a greater velocity over the same surface, it renders the attention less steadfast, and the memory less retentive.

From this source many evils arise in education. The teacher not unfrequently adopts the most improved book, as a mechanical facility for despatch, and adheres to the very letter of its prescription, as the greater security for his object. Apparent improvement is thus easily created ; but unfortunately it is at the expense of individual mind and character in the pupil, as it excludes effectually the possibility of personal thought and investigation. We have for this reason been the more anxious to see the valuable work of which we have been speaking used in the true spirit of instruction, as a means of creating and cherishing thought, and inspiring the mind with that saluary strength which results from the consciousness of free and spontaneous effort.

As it is not improbable that some of our readers have not yet had opportunity of perusing this work, it may not be unimportant to mention that it consists wholly of courses of useful questions on various subjects of elementary knowledge. The fifth section we have selected as a specimen, and, and on the

whole, a favourable one, of the character and design of the book.

DIFFERENCE BETWEEN UNDERSTANDING AND INTELLECT.

Questioner. Are you an animal ; that is to say, a living creature ?

Q. Are birds and fishes, and cats and dogs, also living creatures ?

Q. Birds can fly in the air, and fish swim in the sea, but dogs and cats live on the earth as you do : in what then do you differ from a cat or dog ?

Q. But in what respect, besides shape, do you differ from them ? Do they not eat, and drink, and sleep, as well as you do ?

Q. Do dogs and cats like to be kindly treated, and love those who treat them kindly ?

Q. Do you not likewise like to be kindly treated, and love those who are good to you ?

Q. So far then, it seems, there is no difference between you and them. But can dogs and cats speak ? Have they the use of language ?

Q. Though they cannot speak as we do, they can make sounds to be understood by one another ; and can plainly signify when they are angry or pleased. What can you do more ?

Q. Do the grown up people who are now your teachers know more than you do ? Are they wiser than you are at present ?

Q. Were they not once little children like you ?

Q. When they were children, did they know as much as they know now ; or were they then like you, ignorant of almost every thing ?

Q. Was it merely by growing big that they became wise ? or was it by attending to instruction ?

Q. Though only a little child, you can understand what I say to you : do you think a kitten could thus understand me ?

Q. Besides the gift of speech, you have then another gift bestowed on you above what is enjoyed by other sorts of animals ; for have you not the gift of understanding ?

Q. That you may perceive this point distinctly, tell me, if you were very cold and saw the fire likely to go out, and that pieces of coal, or turf, or of wood fit for burning, were within reach, could you not contrive to keep up the fire ?

Q. How would you effect your purpose ?

Q. Do not dogs seem in cold weather to like the warmth of a good fire ?

Q. Large dogs can carry very heavy things in their mouths ; but could the wisest of dogs contrive to mend the fire by adding fuel to it ?

Q. To contrive requires thought. You then have a degree of thought which the wisest of dogs have not ; but if you were left by a friend in a strange place, when you lost sight of that friend could you trace him out by smelling his footsteps, following his course, and turning where he had turned, until you discovered where he was ?

Q. When a dog loses his master he can do all this ; and though he were to be blindfolded and led to a great distance, could return on his own steps, though he never saw the road ; in this a dog can do more than any of us can do. Did he learn to do this (as we learn to do things) by attending to instruction ; or did he do it from nature ?

Q. Did you ever see a bird's nest?

Q. Would it not be a long time before you could learn to form such a nest; even though all the materials were placed within your reach?

Q. Who taught the little bird to make its nest so neatly? Did it learn at a school?

Q. Every kind of bird builds its nest in the way that is common to its kind. A sparrow does not make its nest like the nest of a swallow, nor does the swallow build hers in the manner of the sparrow. Do you think that either of them could learn to imitate what is done by the other?

Q. But though you perhaps might never be able to build a nest so neatly as a little bird, are you not in many instances able to do what you see done by others?

Q. Do you wish and expect to be able in a little time to do more than you yet can do?

Q. Do you think that any bird or beast has the wish or expectation to be able to do more than it can do at present?

Q. Does not this show that your nature is superior to theirs?

Q. If you had no wish or desire to learn more than you have yet learned, do you think that by such indifference you would give proof of the superiority of your nature?

Q. It is the nature of cats to catch mice. When you see a little kitten at play, and observe how quickly it springs on whatever it can lay hold of, and toss it in its paws, do you think it is acting contrary to nature?

Q. If you, who are by nature capable of improvement, do not wish and endeavour to improve; will the kitten or you be acting most agreeably to your respective natures?

Q. You think that you have more understanding than a kitten?

Q. How do you show or prove that you have more understanding?

Q. Can you learn much in a single day?

Q. What is twice one? *

Q. Monday and Tuesday make two days:—If you learn, then, something on Monday, and as much on Tuesday, how much wiser will you be on Tuesday night than you were on Monday morning?

Q. Go on to learn as much more on Wednesday, which will make three days; how much wiser will you then be?

Q. Add a fourth day, Thursday, and will you not then be four times as wise as you were on Monday morning?

Q. Friday will make a fifth, Saturday a sixth day; so that by Saturday you will have advanced six degrees in learning. But will you not still have much to learn?

Q. If you spend one whole day without learning any thing, will you then, on Saturday night, know six times more than you did on Monday morning?

Q. See then the value of a single day. You have told me that human beings are distinguished from brutes, by having minds capable of improvement: will any who desire to improve, be happy at the end of a week to think that they have lost a day?

* In what follows, the pupils are supposed to have obtained some knowledge of numbers.

ART. VII.— *An Address delivered before a Meeting, assembled in Baltimore, April 16, 1829, for learning the objects, and aiding the cause of Infant Schools.* By Charles Dexter Cleveland.

[Our readers will, we doubt not, peruse with much satisfaction the following evidence of the increasing interest taken in infant schools. The author of this address speaks on the subject with the eloquence of enlightened zeal. We are happy to transfer to our pages such expressions of what has now become general sentiment on the importance of commencing education in infancy, and of admitting all classes of society to its benefits. There is an additional value in discourses such as the following, and one of no ordinary kind, in the assistance which they contribute towards the advancement of public opinion on methods of instruction. The infant school system introduces principles and modes of education previously but little used, and which seem calculated to effect a happy change in all the means employed for developing the mental and corporeal faculties.

If the methods adopted in infant schools are true to the human mind, and favourable to its expansion, its vigour, its activity, and its happiness, then the whole plan of elementary instruction as commonly pursued, needs revision and amendment. This reformation, we are happy to observe, is begun; and in very many of the primary schools in villages and country districts, as well as in cities, teachers are borrowing useful hints for improvement from the methods employed in the infant schools.

As a subject of contemplation to philanthropic minds, these useful institutions are deeply interesting: they are fraught with auspicious prospects for humanity, in the facilities they afford for the general diffusion of intelligence and virtuous principle. It is in this light, too, that they offer the largest promise of intellectual progress, by producing a universal elevation of the mental habits of society.]

MR. CHAIRMAN—

It is now but little more than three months since a meeting was first held in this city, for the purpose of taking into consideration the establishment of Infant Schools. At that time the persons, who actively engaged in this benevolent work

had some opposition to encounter, and many obstacles to surmount. There were doubts to remove, fears to quiet, ignorance to enlighten, prejudices to overcome. But they went forward steadily and firmly to the object they had in view. They were cheered by the approving voice within ; a voice far more animating and sustaining than all the vain plaudits which could meet the ear from without : and I cannot but feel grateful to them, for their benevolent plans, and their corresponding and well directed energies ; and congratulate them on the high success which has crowned their exertions.

Yes, sir, I do not hesitate to say that in this thinking, benevolent, soul stirring age, there is no cause purer in its nature, or loftier in its objects than that of infant schools.

The primary and leading object of infant schools, is the *moral* education of the children of the poorer classes in the community. I say *moral* education, apart from intellectual and physical, for although these are ultimately fully attended to, yet they are made entirely secondary and subservient to the other. This is as it should be, both from the high destiny of our moral being, and the more immediate wants of the children, who are the objects of the institution's benevolent care. They are mostly taken from that class of society, who have neither the means, the inclination, nor the moral and intellectual qualities to educate their offspring. They are collected from the lanes and alleys of the city, where they are continually subject to hear, and perhaps often use, the most profane and vulgar language ; and brought together to be instructed in the simplest precepts of virtue and religion,—precepts made perfectly intelligible to their infant minds, and which are received with seriousness and pleasure, from the happy manner in which they are communicated. The children are such, as, without the exertions of the benevolent, would grow up in idleness, ignorance, and vice. The mother, to whom the care of the infant person, and the cultivation of the infant mind belong, is obliged to be incessantly employed in earning the means of subsistence for her family, and is, probably, the greater part of the time, from home herself ; and even were this not the case, a very unsuitable person for the proper guidance of her infant family. Such then is the class which infant schools are designed to benefit.

But it may be asked, how can instruction be imparted to children of so early an age ? How is it possible that a mass of children assembled from such families,—that such a 'moral

chaos' can be reduced to order? Let those who would ask this question visit the infant schools themselves, and they will soon learn how ductile is the human mind; how susceptible of good impressions; how capable of gaining and retaining useful knowledge. It is indeed astonishing to witness how great a moral change can, in a short time, be effected by simple moral means. The first object of the teacher is to gain the affections of the children; to guide them '*with* their will, not *against* it.' We are creatures of imitation; and never does this characteristic of our nature so obtrude itself upon our notice, as in observing the actions of children. What, therefore, the teacher wishes the children to do, he begins to do himself, and finds that they readily imitate him. Moral and devotional sentences are repeated to them, which they soon learn, and they show, by their conduct, what an effect these have had upon their character. Where the children see no examples but those of virtue and order, they will imbibe principles of virtue and order themselves. Where they hear no language but what is perfectly pure, they will use no other. The daily bending of the knee in devotion, too, has a most soothing and composing influence, even upon the infantile mind; for a wise Providence has so constituted us, that we feel in the heart long before we understand in the head. Thus it is, that, by example, by kindness, by winning, affectionate manners, by gentle language inculcating the most simple, moral, and religious precepts of duty to man, to brothers, to sisters, to parents, and to God, provision is made for the *moral* wants of these interesting, these immortal beings.

Next in importance to the improvement of the *heart*, comes the cultivation and furnishing of the *mind*. The plan adopted in infant schools, for developing the mental powers of the children, is in strict accordance with the soundest principles of the philosophy of our nature. It is, in substance, the plan of the great Pestalozzi, who, if we look at the moral effects produced, is, perhaps, the greatest benefactor of his age. In a word, instruction is communicated through the sense of sight, simultaneously with that of hearing. *Things* are learned, before *words*, the names of things. This is the only philosophical mode; for abstraction is the last thing that man learns, and, carried to a great extent, the most difficult. Hence, in the instruction of young minds, we should connect the *things themselves*, of which we would give them an idea, with the *names* of the things. This course is pursued most successfully

in the infant schools, it being the grand secret of developing the infant faculties. As soon as the alphabet has been mastered, which is done in an incredibly short time, the pictures of objects with which the children are familiar, are placed before them ; and underneath the objects are the names in large letters. These they spell and pronounce ; and repeat, after the instructor, some sentence in which the word is introduced, and the use of the object is specified. Thus they learn, at once the names of the things, and their uses, and in this manner acquire perfectly clear and definite ideas. The same plan is pursued in instructing the children in the science of numbers. They never repeat the abstract numbers, one, two, three ; &c., without connecting them, at the same time, with some sensible object, (such as balls, for instance,) which they count off, and when they *say* one, they *see* it, and thus obtain a clear idea of unity. By proceeding in this manner, the children are soon led on to some of the most complicated questions in mental arithmetic, and solve them with a readiness that excites wonder and admiration. Thus it is that, by pursuing this plan, and by continued familiar questions and conversations of the teacher that the infant *mind* is furnished.

The *physical education* of the children, also receives its due share of attention. The rooms, in which they assemble, are spacious and airy. Their positions, for the sake of exercise, are frequently changed. Their plays are so intermingled with their studies, that each, in turn, relieves and helps the other. They go to their play with animation, and with equal animation, and, I can say, with more delight, return to their studies : for the acquisition of knowledge, if it be properly communicated, is pleasing and delightful to the human mind.

We have thus taken a very rapid glance at the manner in which children are educated in the infant schools, physically, intellectually, and morally. And now, we would ask, can the utility of these institutions for one moment be doubted by any person ? Is there any thing visionary either in their plans or their objects ? Are the subjects of their attention far removed from us, so as to be nearly without the circle of human sympathy ? Neither of these can be pretended. We send, annually, thousands of dollars to christianize the heathen : we think, well. But there are many honest and doubtless good men, who think differently ; that the money might be much more usefully expended near home. We send supplies after supplies to the suffering Greeks : we think, well. But there are

many sensible men who think differently ; that these people are neither fit for liberty, nor worthy of that assistance which would help them to obtain it. But in this case there can be but one opinion. The objects are immediately before our eyes : they come up to us, as it were, from our very bosoms. They are idle, ignorant, and exposed to vice. The question is, shall we make them industrious, intelligent, and virtuous ? Shall we leave them where they now are, likely to grow up useless, if not injurious members of society ? or shall we bring them out from where they are, and qualify them for lives of happiness, usefulness, and honour ? qualify them, on earth, for the highest honours a free people can give : qualify them, in heaven, for higher honours than man *can* give ? Surely it would be insulting the understanding, and reflecting upon the benevolence of the present meeting, to think there could be but one answer to this question : to think that the encouraging presence, and the approving voice will not be accompanied with the helping hand. The managers of this institution are giving their time and exertions immediately for the good of the children, but mediately for the good of the community, of which these children are soon to form an essential part. Can, then, that community fail to send out that, which, in a few years, will return to them in something infinitely more valuable than money—in industrious, intelligent, upright citizens ? It is impossible. I would then bid the managers of the infant school look up with high and proud confidence of support from this crowded, intelligent audience. They are now engaged in the best of all causes. Their lives may be long : their benevolent labours in those lives may be many and great : but never can they exceed what they are now doing. They are doing indeed a great good. Let them then go on. Let them ‘give full length to the reins of their benevolence ;’ assured, as they will be, not only of the benevolent wishes and beneficent support of every good member of society ; but that, when years shall have rolled away, the infantile objects of their present care will rise up and call them blessed ; and throughout eternity, hail them as the instruments of their everlasting happiness.

ART. VIII.—*Essays on the Philosophy of Instruction, or the Nurture of Young Minds.* Phelps & Clark. Greenfield, Mass. 1829. 18mo. pp. 35.

THIS little pamphlet forms a good specimen of a popular tract on the principles of education,—a subject of the utmost moment to the whole community, and involving particularly the duties of parents and teachers, yet one on which few definite or extensive means have been used, to disseminate knowledge or excite thought. The Lyceums and the associations for mutual instruction, which are now established in so many parts of the country, will, we hope, frequently introduce, at their meetings, topics connected with education, so as to render them objects of general attention. Practical discourses on such subjects might occasionally be published as tracts for distribution in neighbourhoods, or to a greater extent if thought expedient. To promote the reformation already so successfully begun in primary schools, short and familiar treatises on the various departments of education and on methods of teaching, are much wanted. Parents and teachers must have the means of keeping pace with those advances in science which have an influence on common education; and, above all, the progress of improvement in instruction seems to demand a series of elementary tracts on the mind, which would serve to throw light on the means of developing its faculties.

The essays mentioned above possess a peculiar value, from the strict connexion which they recognize as existing between the modes of instruction and the natural progress of the mind in its acquisitions. ‘Education,’ says the author, ‘should, in all its branches, be perfectly analagous to the gradual and direct process of nature in rearing the tender germ of the acorn into the majestic oak.’ One of the fundamental errors in education seems to be the neglect of this very obvious principle. In our misjudging haste and anxiety, we are apt to regard the mind of the infant as a thing to be treated like a material substance which we take up and fashion into a given shape; and which, even then, will become stationary and useless, unless we impel it in a particular direction, and sustain, by various excitements, the impulse we have imparted to it. Hence the injurious eagerness to force the mental faculties into premature activity, or to restrain and control their action, by plans of education to which the mind must, at all hazards, be made

to conform,—by flattering or compulsory excitements to precocious application,—by prescribing arbitrary rules and artificial lessons which are revolting to the natural feelings of childhood, and through which it loses the happiness and the conscious vigour of a self-moving energy. It is too generally true, that the human mind, with all its noble endowments, does not receive, at the hand of man, the chance afforded even to the productions of vegetable nature. The least informed of mankind would deem it absurd, in the management of a nursing which he was desirous should become a healthy and vigorous tree, to attempt the furtherance of his wishes by putting forth his hand to accelerate the unfolding of the buds, or to give direction to the growth of the twigs. 'He contents himself with planting the object of his care in a generous soil, and in a situation exposed to the genial heat of the sun. Forcing measures, of any sort, he uses with great caution, and very sparingly : his chief anxiety is to ward off the injurious insect, and the other enemies to which vegetable growth is exposed.

The mind, it is true, is much more susceptible of influence, than the vegetable ; but this fact does not prove that we may therefore exert influence unthinkingly and indiscriminately. If the soul is a plant of immortal growth, and is, for its perfection, rendered capable of an infinite variety and extent of impressions, does it not rather become our duty to watch, with the awe of an immense responsibility upon us, what influences we select, and how we apply them ? Is the human mind the only production of creative wisdom which cannot be left for a moment to itself,—to the impulses of its own divine constitution, and to the salutary array of circumstances amidst which it is placed ? Does the culture of exterior nature afford no lesson of analogy, for developing and cherishing and strengthening the interior ?

Education, to be effectually improved, must be adapted to the nature of the mind,—must be offered as an humble help to a superior power. It must not dictate. Its proper place is that of a watchful and ready servant, not of a master exercising perpetual control. In moments of exigency its power may need to be felt. But even then it should be the guidance of 'the gentle hand which leads the elephant with a hair.' Force, even in the attitude of silent opposition, should appear, what it truly is, a violation of the laws of the mental world.

Instruction, if rightly understood and applied, would stand by the mind, watching its progress with friendly interest and

forethought ; seldom prescribing its course, but ever ready to cheer and encourage it to effort ; occasionally throwing light on dark and obscure spots, and, when necessary, offering the helping hand. There is, in a word, an education emanating from circumstances and from the mind itself, which, under one or other of the various forms of action and reaction and combination, gives to the human being, without much aid from direct tuition, the elements and, indeed, the substance, of all useful instruction. We do not, we believe, disparage the value of the influence of mind on mind, when we put a liberal confidence in the silent, unobtrusive, and too much neglected instruction, which, although it does not wear the name, accomplishes the best purposes of education. We quote, with much pleasure, the following clear and instructive testimony on this subject.

‘ Every man may be said to begin his education, or acquisition of knowledge, on the day of his birth. Certain objects repeatedly presented to the infant, are after a time, recognized and distinguished. The number of objects thus known gradually increases, and, from the constitution of the human mind, they are soon associated in the recollection, according to their resemblances or obvious relations. Thus, sweetmeats, toys, articles of dress, &c. soon form distinct classes in the memory and conceptions. At a later age, but still very early, the child distinguishes readily between a stone or mineral mass, a vegetable, and an animal ; and thus his mind has already noted the three classes of natural bodies, and has acquired a certain degree of acquaintance with natural history. He also soon understands the phrases ‘ a falling body,’ ‘ the force of a moving body,’ and has therefore a perception of the great physical laws of gravity and inertia. Having seen sugar dissolved in water, and wax melted round the wick of a burning candle, he has learned some phenomena of chemistry. And having observed the conduct of the domestic animals, and of the persons about him, he has begun his acquaintance with physiology and the science of mind. Lastly, when he has learned to count his fingers and his sugar plums, and to judge of the fairness of a division of a cake between himself and his brothers, he has advanced into arithmetic and geometry. Thus, within a year or two, a child of common sense has made a degree of progress in all the great departments of human science, and, in addition,

has learned to name objects and to express feelings, by the arbitrary sounds of language.*

A system of education which could be said to be properly adapted to the human being, ought, then, to be founded on the great principles that every infant is already in possession of the faculties and the apparatus required for his instruction, and, that, by a law of his constitution, he uses these to a great extent himself; that the office of instruction is chiefly to facilitate this process of education, and to accompany the child in his progress, rather than to drive or even to lead him. Education conducted on these principles would naturally be divided into three stages; the blending and advancing of which ultimately produce the full effect of instruction. The three principal stages of mental developement are characterized by the means employed: these are successively,

Objects and their relations;

Representations of objects, by drawing or painting;

Representations of objects and their relations, by language, oral or written.

Education has usually commenced at this last point; the two preceding it being seldom introduced, or neglected till a season comparatively late, unless in the infant schools, and other seminaries, which are taught on the method of Pestalozzi. It is too common for teachers, and, in particular, for mothers, to imagine that the education of a child begins at the moment of attempting to learn the alphabet. A long, interesting, and very useful course of instruction on things and pictures, is thus overlooked; and the neglected pupil begins to pore over his letters, without any assistance derived from a previous discipline of observation on the forms of objects; when, with a great deal of pleasure and profit to himself, he might have acquired the means of distinguishing at sight the different letters, and therefore of remembering and recognizing them with very little trouble. What is done when a child is taught a letter? He has actually, though not nominally, received a lesson in geometry. The letter A, for example, being yet unassociated with one or more sounds in the mind of the little learner, is to him what it actually is when divested of such associations—a diagram. Now, his ability to recognize it,

* Arnett's Elements of Physics, a book which we should be happy to think was in the hands of every teacher.

when shown to him a second time, must depend, as far as he is concerned, on one of two things,—a natural clearness and retentiveness of mind, or a facility arising from the habit of discriminating. All children have not the former of these qualifications; but all may become possessed of the latter; and even where the former is enjoyed in a high degree, it will be greatly improved by the latter. A child who begins to learn his alphabet with the advantage of having been thoroughly trained to distinguish objects by their form, commences his lessons with his mind in a high state of preparation for what is to be laid before it. If, further, he has been allowed to look often at pictures, and to tell the objects which they represent, tracing with his eye, or, (if possible,) with his hand, the lines of which they consist; he is brought one step nearer still to the ability to discriminate the forms of letters.

The alphabet, then, when made the first object of attention and observation, is entirely out of place; and the child to which the letters are prescribed for a set of first lessons, is unnaturally and improperly tasked; being required to perform the exercises of a stage of intellectual progress which it has not reached. Talent on the part of the child, and ingenuity on that of the teacher, may, it is true, and do often overcome the difficulty in this case. Nature at work on the one hand, and human skill and kindness on the other, may achieve any thing of which the faculties are capable. But success under such circumstances is far from proving that much more might not be effected under circumstances more propitious to the powers and the discipline of the mind. The ancient method of teaching Latin, was to put into the hands of a boy a book of no inconsiderable size, all written in Latin, and compel him to learn his way through it; and this method made excellent scholars,—some of the greatest of which England can boast. But who would appear as an advocate for this method now? Yet there was a time when to remonstrate against this preposterous violence, was treason against the majesty of established usage in education; and the first decided step of departure from this good old way was,—‘*unheard of innovation!*’

Fortunately for the progress of elementary instruction in our day, the study of material objects—of substances and forms, of colour, and weight, and number,—has already found its way into education, in the infant schools,—a convincing experiment in the science and art of tuition, which silences all the objections of narrow theories, by the extent and force of

its results. A familiar course of instruction, adapted to the circumstances of infancy and childhood, was prepared by Pestalozzi in his book for mothers. Parts of this useful work have run through several editions in England; and one or more have been republished in this country.* It would be unnecessary, therefore, to enlarge on this subject, here. The method recommended is in part illustrated in the directions contained in 'Practical Education,' which prescribe blocks of various forms, as playthings for young children; and when carried out, under the care of a mother, would be embodied in familiar conversations about the colour, form, size, weight, number, and uses of objects. The lessons given consist chiefly in examining, by sight and touch, whatever objects are around the child, within doors or without. The intellectual benefit of these exercises is to impart definite, clear, and accurate conceptions, by a natural and salutary discipline of attention and judgment. Moral instruction, as well as healthful exercise and recreation, may be combined with such lessons; or rather, perhaps, may form the chief objects of attention in them.

Another department of interesting and useful instruction, which might be pursued to great extent and with much benefit, before children learn to read, is the use of *pictures*. These, as has been shown in the infant schools, may serve to furnish a great variety of exercise, finely suited to the capacities of childhood. The number, colours, forms, and proportions of objects, may thus form subjects for the discipline of the senses and the mind; and, by judicious arrangement, may be made helps to the infant faculties, in attempting to discriminate the forms of letters and words. Independently of this last advantage, however, pictures, as representations of visible nature, may be used for instructive lessons on all sorts of objects which children are in the habit of seeing and observing; as plants, animals, scenery, and productions of art in daily use. When human beings are represented, their actions may be made the subjects of moral lessons, by questions and conversation. Religious instruction, as far as the mind is capable of it, may be mingled with all such exercises of the mind. Nature, whether in its animated or inanimate forms, may, in this way, be reproduced, or called up to the thoughts, at any desirable moment, to

* Maternal Instruction, &c. Salem. Whipple & Lawrence. 12mo
—reviewed in last No. of this Journal. See p. 53.

bring along with it the idea of its Author, and to cultivate those impressions of his power and goodness for which the unoccupied mind of infancy is ever ready. An agreeable and salutary variety may, by this means, be imparted to instruction, and form the basis of simple ideas about language, as another, and only an arbitrary, species of the representation of things and thoughts. From this step an intelligent parent or teacher will not find it difficult to pass to elementary notions of the mind, which conceives and delineates all forms of representation, as a wondrous and noble production of creative power. By such aid, the infant which repeats the name of the invisible Father, may come to use the word, not altogether without a meaning, and may happily learn to think of God not as a form of the imagination, (which is too commonly the case,) but as a 'spirit.'

The suitableness of pictures for the purposes of instruction we may gather from the eagerness of the child itself to contemplate them. They secure the attention without effort, and they interest the imagination and the heart. They serve to expand, in a silent and natural way, the whole intellectual being. The benevolent Mr. Wilderspin, the agent of the English infant school society, and himself one of the earliest and most successful teachers of an infant school, recommends pictures as a sovereign remedy for all the perturbations and mental ailments of infancy. That kind hearted man used to keep a supply always at hand, ready to be exhibited when any of his pupils seemed disturbed or grieved. By means of these he found he could instantly change the key of the mental mood, and restore the little being to happiness,—a benign substitute, certainly, for the rod, and a fine prelude to the sway of reason and right feeling, at a later stage of character.

But we need not expatiate on topics which are themselves so fruitful of thought. Suffice it to say, that pictures, in the hands of any mother, may be made instructive and useful, long before a child has learned his letters. If the mother has herself enjoyed liberal opportunities of education, she may render pictures an adequate means for teaching the elements of all that a child can learn; and she may make her lessons from them as systematic as she pleases, and comprehensive enough to embrace the rudiments of all useful knowledge.

X Dismissing, for the present, any farther consideration of the first two stages of education,—*objects* and *pictures*,—we come

to that more immediately connected with the subject of the essays mentioned at the outset of this article,—the department of *language*. To acquire an intimate knowledge of any complex object, two things are essential : 1st. a survey of the whole object, as a compound unit.—2d. an examination of its constituent parts separately. To render a learner practically expert in recognizing such an object, we should afford him further aid, by allowing him to take it to pieces, and afterwards to put it together again. A word, as represented to the eye in type or by the pen, is a complex object such as we have just supposed. It is a combination of characters. To be rationally studied by a learner yet ignorant of it, it should be studied as any other visible form. But the current mode of teaching inverts the natural order, and professes to teach children words by means of *spelling*,—that is to say, it commences at the last stage of study and practice, that of *analysing* and afterwards *making words*, by putting together their component parts. The natural mode of instruction is exemplified in the infant school method, now successfully introduced, by means of that excellent little book Worcester's Primer, into many of our elementary schools. Take, for instance, the word *Cat*. On the customary plan, a child must first learn *all the letters of the alphabet*, before being permitted to attempt such a word. Then he must repeat, after his teacher, the letters of the word singly, or do it himself, if he happens to remember them. He is then perhaps asked the unreasonable question, 'What does that make?' If he understood the question at all, he would naturally answer *Secaytee*. For this Hindoo-looking word would be the fair result of combining the soft sound of the letter C, the 'name' sound of A, and the sound of T. The learner, however, is told that he must call these three letters 'Cat.' This direction is altogether arbitrary ; and his success in complying with it must depend entirely on his recollection of what he is told,—not of what he sees, or would incline to suppose. If the names of our English letters readily suggested their sounds, this mode of teaching would be less objectionable. But as they seldom do, it has no foundation in reason ; and it could never succeed at all, but for the readiness of the young memory.

The new method, (which is successfully exemplified in Worcester's Primer, See Lesson First,) is founded on very different views of the mind and of language. On this plan, the child enjoys, in the first place, the advantage of associating

words with things, by receiving for its first lessons the names of familiar objects or of animals, annexed to a representation of them. In this way, the word *Cat* would first be offered to the attention in conjunction with a picture of the animal. After having become familiar with the word, by observing it under the picture, and pointing it out in any lesson or page where it occurs, the child is made acquainted with the individual letters of which it is composed, and at last is taught to combine them in the enunciation of the whole word.*

The course commonly adopted is, as every person knows, after learning the names of the whole alphabet, without applying or using even one, to commence the study of syllables arranged in columns ; and after this second mass of unused and undigested knowledge has been forced into the memory, (every other faculty being carefully kept in a dormant state, waiting till this has received its load,) the little learner is carried onward to columns of words, very systematically arranged, it is true, but divested of all meaning and connexion, and multitudes of them far above the comprehension of childhood, and lying out of the region of ordinary use, even among grown people.

The essays which have led to the preceding remarks, are directed particularly against the last of these evils. On this point the author expresses himself as follows.

‘An inattention to the order of nature and reason is observable in the rudiments, and almost the whole progress of *English* reading. In some of the first lessons in spelling, the child is overwhelmed with words, which are totally unmeaning to him ; many of which can hardly be considered, as belonging to the English language. A multitude of others are of no present use to children, while perhaps the greater part of those, for which they have an *immediate* demand, are excluded. The consequence is, that after having spent many a tedious month on their spellings, when they are put on reading sentences, they are every moment meeting with words, which, though perhaps familiar to their ears, are strangers to their eyes. In this situation they hesitate and stammer, and drawl out every word, exhausting their own spirits, and those of their instructor. Hence, I think, we may emphatically ask, what is the use, or the proper design of a spelling-book ? Some perhaps may reply, It is to exercise the *MEMORY* of children ; to acquaint them with the *PRONUNCIATION* of words ; and to prepare them for writing correctly in subsequent life. All these things, indeed, may well be brought into view ; but, I contend, they should all be subordinate to another design, viz. that of training the child more directly and effectually for the *reading of sentences* ; that he may be enabled to read his first lesson of this kind with readiness and propriety, and grace. So far as *memory* is the final object, that will receive

* This method seems, from its its simplicity, preferable to that recommended at page 10th of the Essays.

better nourishment from *things* than from the *shadows* of things ; and still more, than from the shadow of shadows ; I should as soon think of crowding the *stomach* of a child with food, which I knew he could not digest for one, two, four, six, or ten *years*, as I should of requiring him to learn the orthography, or pronunciation of words, which were either to be forgotten, or to lie, as a useless burden on his mind for the same period of time. The mind of the learner should be like the lumber room or depositary of the cabinet-maker, where there is no superfluity, and no confusion ; where the use and design of every article is understood, and where every thing is so thoroughly sorted and arranged, that, when required for use, it may be instantly found. Education, in all its branches, should be perfectly analogous to the gradual and direct process of nature, in rearing the tender germ of the *acorn* into the majestic *oak*. It should resemble the work of the *mason*, who begins at the *foundation*, not at the *top*, nor the *MIDDLE* of the *building* ; who makes each course of stone or brick to answer the double purpose of filling its own proper place in the building and of preparing directly and immediately for the next course ; and not a single brick is laid without accomplishing both these ends.

‘If I have not wholly misunderstood the dictates of philosophy, this gradual, direct, and constant progress should appear in all the elementary books, employed in education, without excepting a single branch, as also in the method of *using* these books.’

The following remarks, though general in their character, apply, with peculiar force, to the mode of teaching children to read.

‘But the loss of time, great as it is, is very far from being the *principal* evil, arising from the want of method in common education. While our children make little progress in real information, they are rendered in a measure *incapable of future* proficiency. The understanding cannot long be neglected without being stunted, if not thoroughly blighted. The mind as naturally hungers for truth, as the body does for animal food ; and it is no less unphilosophical and unwise, not to say inhuman, to neglect this natural craving in the one case, than it is in the other. We should make it as much a principle of conscience and of feeling to supply our children with mental food every day, and if possible every hour, as we do to provide them with their necessary meals. I do not mean that they should be kept constantly at their books, nor that we should be perpetually delivering them lectures, which are addressed more to their ears than to their apprehensions, but that we should accommodate ourselves to their natural curiosity ; that we should encourage and answer their questions, and adapt all our instructions to their understandings, so that every day may add something to the strength and capacity of their minds. But, alas, how far is this from what we generally see in our schools, where, for several years at least, the memory and the tongue are every thing, and the understanding nothing !

‘Some, however, may ask, by way of objection to what has been said. If the understanding is thus neglected, and if the natural consequence of such neglect is to blight the mind, and render it incapable of future cultivation, how happens it that we see so many rising superior to

these disadvantages, and displaying through the whole course of their lives so much intellectual vigour? To this question I answer, that the mind of the child, however neglected, is not entirely without nourishment. Like the young animal, it picks up for itself, here and there, something to sustain its life, and contribute to its gratification. In general it is not in schools, but in the common intercourse of life, that the meaning of language is learned, and that the child is formed to a capacity for receiving any kind of instruction whatever. Wherever he goes, wherever he is, he sees something, from which he learns something; by which his mind is kept from falling into a state of torpor; by which it is nourished, and strengthened, and entertained. In general, the common school has never been, as it should have been, the principal nursery of thought. It has not been the house of *fasting*, but the house of *fasting*; where there has been almost as little employment, or recreation for the mind, as there has been for the hands.

We would earnestly recommend these essays to the attentive consideration of parents as well as of teachers; and, for the information of such of our readers as may not have received the intelligence from other quarters, we would add that the author has furnished a series of small and cheap books, intended to obviate prevailing evils in the manner of teaching the English language. These books, though susceptible of some improvements, are, on the whole, excellently adapted to their object. They are arranged as follows: the Franklin Primer, uniting the purpose both of a primer and, in some measure, of a spelling book; the Improved Reader, an interesting explanatory reading book, of the introductory order; and the General Class Book, containing, among other useful and original matter, a specimen of a familiar school dictionary of definitions and explanations.

ART. IX.—*Botany for Schools.*

[It would give us great pleasure to be often called to make room for articles such as the following. The happy influences arising from the study of nature form one of the finest effects of education. Health mingles its inspiring energy with the pursuits of the naturalist; moral purity and elevation form his mental atmosphere, if he has not suffered his mind to be perverted in other directions; and a congenial discipline of his intellectual faculties is silently but effectually blended with all

his employments. The mind and the body are not set at variance in such occupations, as in those of sedentary application. Here, the whole nature of the human being is in harmonious and happy action : the laws of his constitution are obeyed ; and his progress is one of cheerfulness, vigour, and freedom. The moral merit of this accordance with Providence is, we admit, comparatively humble ; still it is one of the first steps of wisdom. Amid prevailing and arbitrary notions on education, it becomes a positive and valuable attainment, towards which every facility should be afforded to the young.]

THE object of the following thoughts is to recommend the introduction of botany into those schools where it has not yet been attended to. Numerous, and, in our view, powerful reasons urge its introduction into schools, especially those of a higher order. As a lover of nature, as an admirer of the wisdom and power manifested in the construction of the humblest flower of the woods, or the meanest weed trodden under our feet, equally, as in the splendid colours and admirable figure of the most beautiful plant, the writer of this cannot but regret that so little attention has been, and still is, paid to this subject in the education of the young. Its adoption as a branch of school discipline is earnestly recommended.

1. Because it furnishes one of the most interesting and delightful occupations of the youthful mind. When properly taught, it produces in the mind of the young scholar new and pleasing views of the economy of nature, and the harmony and beauty everywhere visible in the works of the Creator. It captivates the young imagination, by opening to the mind's eye a range of varied existence, which is inexhaustible in stores of beauty and perfection.

2. Because it gives interest and utility to our journies and walks. What individual of sedentary habits is there, who has not often wished for an object sufficiently interesting and important to engage his thoughts, and yet not so abstruse as to fatigue the intellect, which might oftener call him forth into the green fields of summer, and impart animation and spirit to his solitary rambles ? Now botany affords precisely the inducement to leave the close air of the school room, the study, or counting room, and to wander in search of the fairest objects of inanimate creation. The excitement produced is sufficiently vivid, without bringing on too violent exertion, and consequent exhaustion. It acts as a gentle and pleasing

stimulus ; and like Cowper's tea, is 'the cup that cheers, but not inebriates.' A true botanist will, perhaps, be incited by a deeper enthusiasm. It will be to him meat and drink, to explore new botanical localities, to discover new plants, and to describe the wonders he has examined. No mountain is too steep or lofty for his ascent, no marsh too difficult for him to penetrate, no forest too deep and entangled for him to thread. He explores with the feelings of a discoverer recesses before unobserved even by the searching eye of the botanist, retreats before untrodden by scientific feet. But as few minds are susceptible of this overpowering enthusiasm, this exclusive devotion to one object, and as this pursuit must, in the great majority of cases, be intermingled with others of more direct and immediate utility, and pursued rather as an amusement of the leisure hours, sometimes occurring in the life of the most busy ; and as it besides can only be prosecuted with advantage during the months of spring and summer, this effect is not often to be expected. Most learners will give it but a secondary place in their attention, and pursue it only as a relief from more serious studies.

3. Botany deserves attention as affording a pleasant and healthful exercise, as calling one often to breathe the pure air of the hills, and thus refreshing body and mind by the influence of rural scenery, and the invigorating breezes of the country. It serves also to call away the youthful attention from frivolous and dissipating amusements. To the melancholy, the retiring, and the indolent it affords strong inducement to bodily exertion, and a pleasant means of throwing off sorrows, real or imaginary, which might otherwise give the character too deep a tinge of abstraction, too strong a tendency to dejection. To invalids this kind of exercise is particularly useful ; and we have known those who have attributed their restoration to perfect health to this cause alone.*

4. It teaches habits of attentive and accurate observation. No progress can be made in this science without the closest attention to minute distinctions, to shades of difference in the meaning of terms, to slight varieties of form and colour, imperceptible to the common eye. None but those, whose early education has been neglected ; and, who have in maturer years

* There is one precaution important to health, but not always observed by persons interested in this pursuit, and from the neglect of which suffering has been experienced ; namely, that in botanical excursions particular care should be taken to keep the feet dry.

undertaken the prosecution of the exact sciences, will easily appreciate the value of such habits. If the young mind be once thoroughly accustomed to them, their effects will be perceptible in the whole of its future progress, giving an accuracy and certainty to all its acquisitions, scarcely to be acquired but by the study of natural science.

5. Botany is useful in teaching habits of order, and arrangement. The system, regularity, and classification introduced into this science by Linnæus, and brought nearly to perfection by succeeding botanists, cannot but have a favourable effect on the mind of the learner. The study of the natural affinities of plants, under what appears at first view an infinite variety and irreconcilable incongruity ; or the observation of what is called the natural orders, will in another way produce a similar effect. The student finds these orders, in some of their external marks and their properties, perfectly distinct, while in others they blend and run into each other, like the colours of the rainbow.

6. Botany has several important practical uses. To the chemist it affords new and abundant materials for dyes, and for various compounds. To the physician it is nearly indispensable, since it makes him intimately acquainted with the external characters and medicinal properties of those plants reputed to possess healing powers. He is thus taught what to introduce into his own practice, and what to reject as useless or hurtful. Medical botany, however, is a branch of the science so distinct, and so closely allied to chemistry, and other branches of medical science, as to render its pursuit in schools improper and indeed impracticable. To the gardener and scientific farmer, the uses of this science are numerous and obvious. With them it should always be connected with geology and entomology,—with the former, that the soil best adapted to any product may be judiciously selected ; with the latter, that the nature, habits, and noxious properties of insects may be fully understood, and the best means of destroying the most pernicious adopted. To the above mentioned classes, then, botany may be made an important auxiliary in supplying the wants, natural or artificial, of the present state of society, and a source of emolument to him who understands and can apply it.

7. It promotes the moral improvement of the young. In this respect it yields to none of the sciences except astronomy. It does not fill the mind with those grand and magnificent

views, and those sublime reflections excited by the contemplation of the heavenly bodies. But it has the advantage of being pursued without the assistance of observatories and expensive instruments, and of adaptation to the capacities of an ordinary mind, undisciplined in the severe training of the mathematics. It has an advantage over zoology in all its branches, in that it does not require those revolting cruelties, and that destruction of animal life, without which that science can scarcely be pursued to advantage. It is preferable to chemistry, as it can be learned with less expense, without apparatus, except a common microscope, without danger, and without the sacrifice of health. But we do not wish in recommending a pursuit to which we ourselves are partial, to depreciate the merits of the other sciences. Let them all be pursued as opportunity offers, and inclination prompts. One of them always tends to throw light upon another. There is an indissoluble connexion between them all ; and we have no sympathies with those who can see no beauty or utility in that particular species of knowledge to the acquisition of which they themselves are not earnestly given. What we wish to inculcate is, that botany is not a frivolous or useless acquisition ; that it is worthy of the noblest and most cultivated intellect ; that the reflections it excites are of the most pleasing, the purest, the most ennobling kind ; that it presents to the eye of him who can read its characters an ever open book of various knowledge, calling constantly for admiration and wonder, continually exciting to the praise of the great Contriver of so many perfections ; exhibiting curious analogies and wonderful laws ; peculiarities of structure varied in ten thousand different forms. We envy not him who can look upon all this without an expansion of heart ; who can contemplate it without deep and beneficent moral impressions. We envy not that worshipper of the great Creator, whose piety is not warmed and purified by the contemplation of such objects. We believe no one can return from a botanical excursion with a mind soured by misanthropy, with peevishness or malice corroding his soul. For the time, at least, he is satisfied with himself, and with all around him. From this book of religion no one learns bigotry—none to prefer the narrow interests of a party, to the exercise of exalted piety. We do not say, that a botanist will never be a narrow minded man : but we believe that the natural tendencies of botanical pursuits are altogether good.

8. It is acquired without serious difficulty. Patience and perseverance, and the recollection of many hard names, are indeed necessary. But what valuable object can be acquired at a less sacrifice ? Who would complain at being sometimes baffled in his researches, at having a few obstacles formidable in appearance to surmount, when the advantages to be gained are so many and great ? And indeed the difficulties to be encountered are rather imaginary than real. Before a determined purpose, and steady resolution, the mountains terrific at a distance, vanish into mole-hills. Few of our instructors are at present qualified to teach this most interesting branch of study. But none need long remain unqualified,—one learns the science, indeed, with more ease with the assistance of a competent master ; but it can be acquired without. Coloured plates and dried specimens are useful, but their assistance even, can be dispensed with. We speak not of theoretical possibility, but of what we have seen accomplished.

9. Botany is peculiarly fitted for introduction into a girls' school. It is admirably adapted to the tastes, feelings, and capacities of females, as is demonstrated by the fact that the majority of our botanists are females. Boys are less easily interested in it ; more apt to be careless and harsh in their treatment of specimens, and too much attached to rude and boisterous sports. Girls, on the contrary, are apt to take delight in examining the most minute peculiarities of flowers, in pressing and preserving specimens, and in delineating the most remarkable with the lead pencil, or in water colours. Their enthusiasm, therefore, will generally be easily awakened. They will almost always regard it as an elegant accomplishment, and worthy some portion of their time and attention. Their active amusements, and bodily exercises too are more restricted by custom than those of boys ; and they, therefore, seize with more avidity the opportunity of gaining in this way, at the same time, air and exercise, amusement and instruction. In them this relaxation is more important and more certain to have a beneficial influence on the health and spirits.

With regard to the proper elementary works, Mrs. Wakefield's book is perhaps not inferior in interest and proper adaptation to the mind of a beginner to any other on this subject ; but being an English publication, the illustrative examples are of course, such as would be most likely to fall under the eye of an inhabitant of that country. It is not therefore so well adapted to the wants of an American student, as an original

work on a similar plan might be, if prepared by a citizen of our own country. The Grammar of Botany, which forms an introduction to Eaton's Manual is without illustrative figures, concise, and somewhat dry. We have, at least, in using it found few pupils, who could either understand its definitions, or become interested in the study of it. Locke's work is not wanting in fulness and accuracy, nor in suitable illustrations. But it presents to the eye of the beginner such a formidable array of technicalities, as nearly to terrify him from the endeavour. We however thought this for a long time the best in use. But Nuttall's Introduction to Botany, is a work possessing decided advantages over all which we have examined. The scholar is led on in this by an easy and natural process. He takes a flower and analyzes it, learns its constituent parts ; their names and offices. He then proceeds to others of the same family, till he insensibly and in a most pleasing way, notices for himself resemblances and differences ; learns the language of the science ; and classifies the products of his own researches.

For the youngest classes the Child's Botany will be found a useful and delightful manual. Bigelow's Plants of Boston, is altogether superior to any work which has yet appeared in this country. The universal approbation which this book has received, makes it superfluous to say more. It does not, however, describe exotics ; nor does it profess to comprehend every species found in New-England. To those, therefore, who would pursue the science to any great extent, Eaton's Manual is necessary. Reference to this book, however, should be avoided by the beginner, when he can obtain adequate satisfaction elsewhere ; since its extreme and faulty brevity in description, the too frequent use of characters and abbreviations, and a certain quaintness in style, which the author acknowledges, make it uninteresting and often unsatisfactory. We say unsatisfactory, because the student will, in numerous instances, find it impossible to ascertain whether the plant, the description of which he is reading, be the same with the one which he holds in his hand, or whether it belong to a widely different species. The Encyclopedias will occasionally be highly advantageous to those who can have access to them. But, after all, botany is a science not to be learned so much from books as from daily examination of specimens, and by means of frequent and devious rambles in the fields, the meadows, and the woods. He will teach it best, who oftenest an-

alyzes and explains the flower just plucked, who frequently accompanies his pupils in their botanical rambles, who points out to them the localities of the various natural families, and teaches them a facility in discovering latent specimens, which only long practice or much and excellent oral instruction can give. The scholar should also be encouraged to seek for specimens, which he has not before examined, in his own solitary walks, to search the books himself for a description of them, and to refer to the science and skill of his instructor to correct the results at which he may have arrived.

Without instruction, on the one hand, he will be led into many embarrassing errors, and without personal exertion in collecting and analyzing specimens, he will make little real progress. Neither should any student of botany neglect to prepare an herbarium, and to fill it with a more or less extensive collection. Its uses for the purpose of reference and comparison are many and great. But such full directions are given on this subject in most elementary works, that it is unnecessary to describe the manner of preparing plants for preservation. Another practice auxiliary to an accurate knowledge of botany, is, drawing the outlines of the most remarkable plants with the lead pencil, or if the individual possess sufficient acquaintance with the art, of making a more perfect delineation by painting. For a good representation of the forms of leaves and stems, the following method, practised by some, but perhaps not generally known, is extracted from the Artist's Assistant. '*To obtain the true shape and fibres of a leaf*—Rub the back of it gently with any hard substance so as to bruise the fibres, then apply a small quantity of linseed oil to their edges; after which press the leaf on white paper; and, upon removing it, a perfectly correct representation of every ramification will appear, and the whole may be coloured from the original.'

INTELLIGENCE

Boston Society for the Diffusion of Useful Knowledge.

[Our readers may recollect that mention has been made, in several of our last numbers, of the contemplated establishment of a society in Boston, intended to embrace the advantages of the Lyceums existing in other places, but adapted to the peculiar circumstances of a city. The following constitution embodies, it is thought, what is essential in a plan for the object proposed. We are happy to transcribe it not only as an interesting article of intelligence, but as furnishing the requisite hints, when needed, for devising similar institutions in other cities.]

A number of gentlemen who feel interested in the promotion and diffusion of useful knowledge, have held several meetings to consider the expediency of forming an Association for the purpose of advancing these objects; and the undersigned have been appointed a Committee to form such an Association, and to recommend it to the patronage of the friends of popular education.

From infancy to the age of seventeen, the means provided in this city by public munificence and private enterprise, are ample. From seventeen to the age when young men enter on the more active and responsible duties of their several stations, sufficient opportunity does not appear to be afforded for mental and moral cultivation.

At this period of life, when the mind is active and the passions urgent, and when the invitations to profitless amusements are strongest and most numerous, it is desirable that means should be provided for furnishing at a cheap rate, and in an inviting form, such useful information as will not only add to the general intelligence of the young men referred to, but at the same time will prepare them to engage more understandingly, with a deeper interest, and with better prospect of success, in the pursuits to which their lives are to be devoted.

The existing deficiency of such means is clearly a subject of regret; and the undersigned are of opinion that this deficiency may be most easily and fully supplied by courses of Lectures delivered in different parts of the city, under the auspices of a Society, whose sanction may secure to the Lecturers employed, the confidence and resort of the public.

It is proposed that the first courses of Lectures should be given to those who are engaged in Trade and Commerce; and that they should include the subjects of Universal Geography and Statistics, and of the Moral, Natural, Political, and Legal Sciences, so far as they may be connected with commercial transactions.

Should the attempt to convey such instruction be as successful as similar efforts in other cities have been, it is hoped that the Lectures may be made more general in their objects and in their application.

With this exposition, the undersigned present the following Constitution for the signature of all those who are interested in the wider diffusion of useful knowledge.

Charles Lowell; William Russell; J. Greely Stevenson; Horatio Robinson; George H. Snelling; Edward Brooks; Chandler Robbins, Jr.; George Bond; Abbott Lawrence; Samuel Swett; James Bowdoin; Henry F. Baker; Samuel T. Armstrong; Enoch Hale, Jr.; William J. Loring; Edward Wigglesworth; Charles C. Nichols; Thomas B. Curtis; John Lowell, Jr.; James Russell; Nathan Hale; Walter Channing; Israel Thorndike, Jr.; Charles P. Curtis; Isaac P. Davis; William Sturgis; Norman Seaver; William E. Channing; Charles G. Loring; Samuel H. Foster.

CONSTITUTION.

I

This Association shall be called the 'Boston Society for the Diffusion of Useful Knowledge.' And its object shall be to promote and direct popular education by lectures and other means.

H

1. Any adult may become a member of this society, with all the privileges thereof, by an annual payment of two dollars, and by signing this Constitution. Minors may become members, in so far as to have the right of attending the lectures, by signing the Constitution, and paying one dollar annually.

Membership shall cease by neglect of paying the annual assessment.

2. The payment of twenty-five dollars shall constitute membership for life, and immunity from all assessments.

3. The payment of fifty dollars shall constitute a person 'Patron,' shall exempt him from all assessments, and give the right of two tickets, one of which shall be transferable.

4. Honorary members may be chosen by a majority of the votes of those present at any meeting of the Society.

III

1. A meeting of the Society shall be held annually on the first Friday in April.

2. Special meetings may be called by the President, when directed by the Board of Managers, or by the written request of ten members.

IV.

1. The officers of the Society shall be a President, two Vice Presidents, a Recording Secretary, a Corresponding Secretary, a Treasurer, and ten Directors; who together shall constitute the Board of Managers.

2. These officers shall be chosen by the written or printed ballots of a majority of the members present at the annual meeting; and shall hold their offices until others are chosen.

V.

1. The President, or in his absence one of the Vice Presidents, or in their absence a President pro tempore, shall preside at all meetings of the Society and of the Board of Managers; which shall be conducted agreeably to parliamentary usage.

2. The Recording Secretary shall notify all meetings of the Society, and of the Board of Managers, and shall keep a record of their proceedings.

3. The Corresponding Secretary shall conduct the correspondence of the Society, under the superintendence of the Board of Managers.

4. The Treasurer shall collect and receive all dues, and donations in money; pay all drafts on him when signed by the Recording Secretary, and countersigned by the President or either of the Vice Presidents; and keep a regular account of the financial concerns of the Society, an abstract of which, with satisfactory vouchers, he shall exhibit at each annual meeting, and whenever called upon by the Board of Managers. He shall give such security for the faithful discharge of his trusts, as the Board may require.

5. To the Managers shall be confided all the concerns of the Society, with authority to establish courses of Lectures, to appoint Lecturers, and fix the compensation, the time and the place; and in general to devise and execute such measures as may best promote the objects of the Association.

6. They shall exhibit the records of their proceedings at every meeting of the Society. They shall have power to fill vacancies in their Board from members of the Society, and to make by-laws for its government.

VI.

This Constitution may be altered at any meeting of the Society, provided that public notice of an intended change is given one week previous to the meeting, and that two thirds of the members present approve the alteration.

Lyceum in Plymouth.

[Through the kindness of a friend, we are enabled to present to our readers the following lecture on a very interesting and useful subject, delivered at the above institution, by the author of a recent publication embracing a more extensive treatise on the same topic.]

Essay on the Honey Bee.

THE science of natural history is eminently important to the civilized world, and ought to be duly appreciated and thoroughly understood. The study and pursuit of its various branches is fraught with instruction to mankind, evincing the subserviency of the products of nature to his will and industry. It is an interesting and laudable source of enjoyment, by which the mind is expanded, and the heart warmed and animated to a grateful contemplation of that Almighty source from which all our blessings are derived. The science embraces the three kingdoms of nature, the animal, vegetable, and mineral; to all of which mankind are indebted for materials of indispensable utility to the arts and sciences. There are in the insect tribe four species which contribute essentially to our comfort and convenience. The honey bee produces a luxury for our table, and wax useful for various purposes in the arts. The silk worm spins a material for a fabric to adorn our persons. The cochineal affords a brilliant colouring drug, and the cantharis is appropriated to useful purposes in medicine.

*Apis Mellifica—*or, Honey Bee.

‘ The bee observe,
She too an artist is, and laughs at man,

Who calls on rules the sightly hexagon to form :
 A cunning architect, that at the roof
 Begins her golden work, and builds without foundation.
 How she toils ! and still from bud to bud, from flower to flower,
 Travels the live long day. Ye idle drones,
 That rather pilfer, than your bread obtain
 By honest means like these, look here and learn
 How good, how fair, how honorable 't is
 To live by industry. The busy tribes of bees,
 So emulous, are daily fed with heav'ns peculiar manna,
 'T is for them, (unwearied alchymists.) the blooming world
 Nectareous gold distils ; and bounteous heaven,
 Still to the diligent and active good, their very labour makes
 The certain cause of future wealth.'

No one among the infinite variety in the insect tribe has been considered more deserving the attention of mankind than 'the little busy bee,' by some called *the honeyfly*. The study of its history and character is truly delightful to the mind that contemplates the mysterious operations of nature, and traces its wonderful phenomena up to nature's God. The natural history of the bee, has, from remote antiquity, arrested the attention of philosophers, divines, moralists, and the inquisitive mind of all denominations of men. We have the precept of the wise man, 'Go to the bee, thou sluggard, consider her ways and be wise.' The native instinct of these little insects, their uniform habits of industry and economy, their wisdom and sagacity, and the peaceful regularity which prevails in their communities, afford a subject most truly sublime and instructive, and which has in all ages been deemed a fertile source of admiration. In their native undomesticated state, bees resort for residence, to cavities in hollow trees, and to cliffs of rocks in the mountains, where they congregate in communities, propagate and rear their progeny, and store up the produce of their labour as stock in common for winter subsistence. But mankind, coveting the produce of their labours, have reduced them to the condition of domesticated animals, and share with them in the luxury which could not be obtained from any other source. An immense multitude of bees are made subservient to the convenience of man, and are by him provided with tenements suited to their condition. There is no branch of husbandry, the cultivation of which furnishes for our table a more innocent and grateful luxury, than that of the bee, nor any part of natural history better calculated to raise our contemplations to that divine wisdom which creates and sustains the immense variety of species in animated nature.

Among the ancients, the history and economy of these interesting insects engrossed the attention of such minds as Democritus, Aristotle, Columella, Varro, Virgil, and many others. In modern times a general taste for entomology has obtained ; and the history of the bee has received the investigation of a host of naturalists of the highest authority, by whom the Apiarian science has been greatly improved and promoted. This insect, however diminutive, could not have existence but by the same Almighty power which created the leviathan of the deep, and the rhinoceros, and the lion of the eastern forest.

It has been wisely ordained by the great author of all things, that the tribe of insects which live in congregated society, and some quad-

rupeds also, should possess wonderful instinctive faculties. The same power who called the human race into being, has with infinite wisdom endowed the insect tribe with all that sagacity, and with those qualities which are best adapted for their peculiar circumstances in the sphere of existence. In every hive are associated three different kinds of bees; females, males, and neuters or workers. The females are styled *queens*, not more than one of which can live in the same hive, and no hive or colony can subsist long without her presence. The average number in a hive is from 15 to 20,000; about 5000 bees will weigh one pound. Of the above aggregate number, 19,499 are supposed to be neuters or working bees, 500 are drones, and the remaining one is the personage styled the queen, or mother; and she is in the strictest sense the mother and governor of the whole hive. It still remains an undecided question whether the honey bee is a native of our country or was imported from Europe. The natives called this insect the 'white man's fly,' from which it would seem that they were unacquainted with the bee till the arrival of the first settlers. Bees, however, were cultivated at an early period of the settlement. In 1640, the general court ordered that 'John Eles should be sent to Newbury to work at his trade of bee-hive making,' and if not able to support himself by his labour, the town were to make up the deficiency. In 1641, mention is made in an inventory of a Mr. Rolfe's estate in Newbury, of several hives of bees with their value annexed.

The bee is no less admirable in the structure and form of its body, than wonderful in its instinct and sagacity. It is all perfect in proportion and symmetry, all harmony in combination of parts concurring to the design of its creation. On each side of its head is a large round eye. It has a long tongue, and two strong mandibles, or teeth, which enable it to construct the comb and cells, and to carry from the hive all obnoxious substances. It has four wings and six legs; in the third pair of legs are two triangular cavities for the purpose of carrying to the hive little pellets or balls of pollen, which they collect from the flowers. At the extremity of each of the six feet are fangs, with which the bees attach themselves to the sides of the hive, and occasionally to each other in clusters. Below the teeth is the proboscis, which is the principal organ employed in collecting the honey from the flowers. The bee has a stomach and a honey bag, or second stomach, which last is of the size of a pea when filled, and is transparent as chrysal. The head of the bee is furnished with two antennæ, by means of which they reciprocally obtain a knowledge of each other, of their young, and their queen, all communicated by the sense of feeling. It is by these simple organs that they are guided in the dark, and enabled to construct their combs and cells, and feed their young. When deprived of both their antennæ, bees can no longer recognize objects; their instinctive faculties are lost; and like Samson after his locks were shorn, they are feeble, helpless, and soon perish. According to the celebrated Huber's experiments on the antennæ of a queen, the amputation of one did not affect her instinct, but when both were cut off near the root, she lost all her influence, even the instinct of maternity disappeared, and the workers themselves seemed to participate in the deprivation. This fact evinced that the antennæ of both parties to a recognition, are necessary, and that it is not alone the mutilated one which loses the power of knowing others. The fe-

males and neuters are furnished with a sting, of which the males are destitute. This is not a simple sharp pointed weapon ; it consists of two separate portions applied longitudinally against each other. The external side of each is provided with several barbs, like those of a dart, which prevent the retraction of the sting. A liquid poison is injected into the wound with the sting, the virulence of which is sufficient to occasion death if the stings be very numerous. Queens are more peaceable and less disposed to sting than the common bees.

Of the Queen Bee.—The queen is distinguished from the other bees by her form and stature, being about eight lines and a half in length, while the males are seven and neuters six. Her abdomen is longer in proportion, and increases much when filled with eggs ; her wings are much shorter, and her colour tends to a deeper yellow. The slowness, and even the gravity of her gait, and the various homage and tender assiduities of the neuters, characterise in a distinguishing manner their beloved queen. She resides in the interior of the hive, and seldom, if ever departs from her station, unless when she leads out a new swarm. The government of bees is termed republican, although it resembles more the monarchical, as a single personage, the queen, governs the whole. The respect and obedience with which she is honoured are truly remarkable ; she is almost continually attended by a circle of her people, who devote themselves to her service, some present her with honey, others pass their trunks lightly over her body in order to remove from it anything that may be offensive. When she walks, those that are in her passage, range themselves in a respectful manner to make way for her. Among 20 or 30,000 bees of which a hive frequently consists, the queen is the only one from which the progeny proceeds ; she is the parent of the hive, and her fecundity is astonishing. She propagates her species by means of eggs : according to Swammerdam a queen contains 50,000 eggs ; and some naturalists affirm, that a queen may be the mother of 100,000 bees in one season, sometimes laying 200 eggs daily. These eggs are deposited in cells, which the workers prepare in the comb for their reception ; each cell is formed of a size and shape according to the kind of bee which is to be produced. Those producing workers are hexagonal and horizontal ; those for drones are somewhat irregular, but the cells containing eggs intended to produce queens, are large, circular, and hang perpendicularly in the hive. The queen, before depositing an egg examines whether the cell is clean, and suitable to its future condition, being aware which kind of bee will proceed from the egg she deposits. The eggs of all the three kinds of bees are hatched in three days to a larvæ, or worm, and this soon changes into another state called pupa, chrysalis or nymph, and about the twenty second day of its existence it becomes a perfect winged insect, but the queen attains to perfection on the sixteenth day.

When the egg is first laid, the workers supply the cell with the pollen of flowers, which serves to feed the young worm coming from it. The presence of the queen inspires the bees with new instinct, and animates them to labour. Should the queen by any means be lost or removed, the whole hive becomes a scene of tumult and disorder. The bees seem to anticipate their own destruction, and should there be neither eggs nor brood in the cells, they will infallibly perish ;

their instinctive faculties are lost ; and in a short time they disappear and die. But if there be brood in the cells, they quietly continue their labours, knowing that nature has endowed them with the power of repairing their loss. This they effect in the following manner. If there are no larvæ in the royal cells, they select a worm three days old, and having sacrificed three of the contiguous cells, they form one adopted for a royal cell ; and the worm which it contains is supplied with a peculiar kind of paste or jelly, of a pungent taste, which is reserved for queens alone. By this process, a queen is produced from a worm which otherwise would have been bred a common worker ; and thus by a singular kind of metamorphosis of their own species they obtain a sovereign, and avert the effect of a loss which would prove the utter ruin of the whole colony. Though the queen lays several eggs in the royal cells, which will successively be transformed into queens, one only in its mature state can exist long in the same hive ; if two come forth at the same time, one must die for the welfare of the community. Nature has therefore, inspired queens with the most deadly hatred, which nothing but actual death can appease. The celebrated Huber has witnessed in his glass hives many duels in which the fate of queens have been decided. They rush together apparently with great fury, the antennæ are mutually seized by their fangs. The head, breast, and belly of the one are opposed to the same parts of the other. The queen which is either the strongest or the most enraged, with her fangs seizes the origin of her rival's wing, then rising above her, she curves her own body, and inflicts a mortal wound. She then withdraws her sting and quits her hold of the wing she had seized, and the victim falls down, drags herself along, and her strength declining she soon expires. During these combats the common bees are in great agitation, they certainly take a decided part, and appear to be aware that it is necessary such combats should have a fatal issue.

The extraordinary antipathy manifested by queens is not limited to their perfect state, for it extends to nymphs yet in their cells. When a queen is hatched, she immediately seeks the cells of those that will become her rival sisters, and uses every possible exertion to destroy them. A young queen in a hive containing five or six royal cells, within ten minutes after her birth hastened to visit the cells containing other young queens. She furiously attacked the first one, began tearing the covering, and having effected an aperture of sufficient size, she introduced her sting, and inflicted on her approaching rival a deadly wound. The victorious young queen proceeds to attack other royal cells, until all her rival sisters are sacrificed to her jealousy.

Should a hive be deprived of the original queen, her absence is soon discovered by the bees ; and great agitation arises ; all their ordinary occupations are suspended ; should the queen be restored she is instantly recognized as their sovereign, and tranquillity is the result. If a stranger queen be introduced immediately after their loss the agitation continues, and she meets with great opposition ; she is surrounded, seized, and kept captive by an impenetrable cluster of bees, where she dies either of hunger or from the privation of air. If eighteen hours elapse before the stranger queen is introduced, she is treated with less rigour, but still is not well received. But should there be an interval of twenty four hours before the stranger is substituted, all

is quiet, she is received with favour, and her reign commences from the moment of her introduction. Huber, among his ingenious experiments, introduced a fertile queen eleven months old, into a glass hive, where the bees having been twenty four hours deprived of their queen, had already begun to construct royal cells to supply their loss. Immediately on her being introduced the bees nearest her, touched her with their antennæ, and passing their trunks over every part of her body, supplied her with honey. These then gave place to others, until all in succession approached their new sovereign, formed a circle around her, touched her with their antennæ and gave her honey.

They now vibrated their wings, and buzzed as if experiencing some agreeable sensation. In a quarter of an hour the queen began to move from her original position, when the bees opened the circle at that part towards which she turned, and formed a guard around her. Some of the workers were labouring with great activity at the royal cells, supplying the royal larvæ with jelly as if still ignorant that they no longer stood in need of them. But the queen having at length repaired to that side, she was received with the same respect and ceremony as on the other side of the comb; and what was a more decisive proof that they adopted her as their queen and mother, they immediately desisted from their work at the royal cells; they even removed the worms, and devoured the food which had been provided for them. 'From this moment,' says Huber, 'the queen was recognized by all her people, and conducted herself in the new habitation as if it had been her native hive.' Thus when bees have had time to forget their own queen, they receive a substitute with greater interest, or, perhaps with more conspicuous demonstrations of it. When a queen therefore, is wanting in any hive, they must either be supplied with brood comb, whereby the loss will be supplied in about fourteen or fifteen days, or a supernumerary queen must be substituted, in which case they will be in a prosperous condition in twentyfour hours.

Of the Working Bees, or Neuters.—The working bees form the great class on which the welfare of a hive principally depends. They are much less in size than the queens, or drones, and are called neuters as being supposed to be destitute of sexual characteristics; but it has been ascertained that some of that class are capable of a partial fertility, but their eggs produce male bees only. The singularity of the means which the Author of nature has directed for the preservation of the species of bees, is particularly remarkable. In almost all other instances, the mothers are the watchful and tender nurses of their young, but in this they only give them birth. The duty of rearing the worm from the egg is committed to substitutes, the neuters, and they, as nursing mothers, manifest precisely the same affection towards the young of their species, as we observe in the real mothers of other animals. They clean and prepare the cells appropriated for the larvæ of the three kinds of bees; and after the queen has deposited her eggs, the workers supply the food adapted for the worms of each species, sealing each cell with a covering different, according to the particular worm enclosed. Nor are these the limits of their occupations, the working bees collect all the honey, prepare the wax, construct the combs, guard the hives, and are ready to sacrifice their lives for the general good. While some are collecting honey, others are search-

ing the flowers for pollen, which they bring home in the hollow of their legs for the young brood. Some are constantly employed in the various works within the hive, as guarding the queen, constructing the combs, and attending to the necessities of the young. While others keep a constant watch day and night at the entrance of the hive: if a stranger bee, a wasp, or noxious insect appear, it is instantly repelled or destroyed.

It is contrary to their nature to suffer any uncleanly substance to remain about the hive; like good scavengers they free their dwelling of all nuisances; obnoxious animals of small size entering a hive are immediately stung to death and dragged out; larger animals which they cannot remove they kill, but carefully cover the body with propolis, or bee glue and wax, to prevent any putrid effluvia which might disturb their repose. A shell snail having crept into one of Mr. Reaumur's hives, the bees immediately surrounded it, but being unable to penetrate its shell with their stings, actually glued up the mouth of its shell with propolis, and fixed the animal so as to be immovable. In another instance, a naked snail, or slug, had entered a hive, this soon expired beneath the repeated strokes of their stings, after which they covered the body with their embalming materials. On taking up a hive in autumn a few years since, the body of a mouse was found entirely encased in the substance of the comb, and so effectually embalmed as to exclude the access of atmospherical air and to obviate the possibility of annoyance from putrefaction.

‘Embalm’d in shroud of glue, the mummy lies,
No worms invade, no foul miasmas rise.’

Evans.

Human wisdom could scarcely devise expedients better adapted to circumstances than is observable in the foregoing examples of instinctive sagacity.

Huber furnishes the following instances showing their capability of defence against an enemy. In autumn 1804, the owners of a number of hives having suffered great loss by the ravages of the *sphinx atropes*, resolved to protect their hives from farther pillage by closing their entrances with tin gratings, with apertures proportioned to the size of the bees, but not having enough for the whole, two were left unsecured. The next morning on examination, it was found that, during the night, the bees had themselves taken the necessary precautions, by contracting the entrances of their hives so as to make them quite safe against invasion. Each was completely blockaded by a wall, composed of wax and farina, in which the bees had taken care to leave apertures, corresponding to their own size: one was broad enough in front to admit of the passage of several bees at once, but so low, that they were obliged to lean over on one side to get through. All the other hives proved on inspection, to be constructed in the same way, even those provided with the tin gratings: fifty three swarms began these operations in the course of the same night.

An unconquerable attachment to their queen is a remarkable trait in the character of bees. Some persons have the address to take her without injury, and wherever she is carried the whole swarm follow after, nor will they forsake her in any situation. So strong is their loyalty and love for their sovereign, that, in one instance, a separation was made by way of experiment; and a number of bees voluntarily refrained from food five days and nights, when they all died of famine,

and the queen survived but a few hours longer, 'disdaining life without the company of her subjects.'* Even the dead body of the queen is a subject for the respect and affection of the workers. Dr. Evans relates, that 'a queen in a thinly peopled hive, lay on a comb apparently dying. Six workers surrounded her, seemingly in intent regard, quivering their wings, as if to fan her, and with extended stings, as if to keep off intruders or assailants. On presenting honey, all the bees except the guards, partook of it, but they, absorbed in their mournful duty, disregarded the proffered banquet. On the following day, the queen, though lifeless, was yet surrounded by her guard; and of this faithful band of followers, not one deserted his post, until death came kindly to extinguish both his affection and his grief.'

A prominent trait in the character of bees is their unrivalled habits of industry. So ardent is their native passion for flowers, and such their pleasure in making honey, that a young bee on the very day of its birth, is seen in the field, passing from flower to flower, and loading its feeble legs with farina, and its stomach with the nectareous fluid. Bees labour from the dawn of day till evening, and never cease to collect honey and wax while the season continues favourable.

These ingenious elaborators of wax and honey are not exempt from the passion which unhappily disturbs the peace of the human species. They discover a propensity to war for the purpose of conquest and pillage. A strong swarm will attack a weaker one and carry the whole stock of honey to their own hive, compelling the subjugated bees to assist in the spoil. But there are some lazy idle individuals among them called spongers, who obtain their subsistence by robbery; they seize upon a labouring bee just returned from the field loaded with honey, which they bite and tear until it vomits up its load, when the sponger takes it to himself and makes off.

Of the Drones.—These are larger than the neuters, more sluggish in their movements, and are destitute of stings. They are known to be males, and are useful only in being instrumental in propagating their species, taking no part in collecting food, or interest in the economical duties within the hive. According to the experiments and observations of Huber, the species are propagated by a generative process peculiar to themselves.† But Mr. Huish, an English naturalist, contends for the doctrine that the bees are vivified by the males, after they are deposited in the cells by the queen, analagous to the spawns of fishes. It is, however, certain that after the period of procreation, and the drones are no longer of use, they are cruelly destroyed by those very workers which formerly watched over them so carefully in their cradles: according to the righteous maxim, 'He that will not work, neither shall he eat.' But these sagacious insects seem to have refined on the maxim, and virtually decreed, that those who are by nature incapable of labour shall suffer an unnatural death. The period in which the general slaughter of the drones is effected is from July to September, when their existence may well be dispensed with till their places are supplied by others from their cells, in April or May following. Mr. Huber being desirous of witnessing the singular

* American Quarterly Review, June, 1828.

† See Huber on Bees. Third Edition.

scene of carnage, placed six hives on a glass table, and placed himself and an assistant beneath it. On the 4th of July, the working bees assembled, and actually massacred all the males in the whole six hives, at the same hour and with the same peculiarities. The glass table was covered with bees full of animation, which flew on the defenceless drones, seized them by the antennæ, the wings and limbs, and killed the unfortunate victims, by repeated stings directed between the rings of the belly. The moment that the formidable weapon reached them was the last of their existence; they stretched out their wings and expired. But it is not on all occasions that the massacre is so general, or so early in the season. I have observed drones in the month of September, when they were driven out of the hive and massacred by the workers.

[From want of room, we must postpone the remainder of this article.]

Education in Greece.

[Those who feel an interest in the affairs of Greece, will be gratified to hear how far the objects of their sympathy are entitled, as intellectual beings, to a share of their respect and affection. A sketch of their public institutions for education, will furnish some ground for a correct opinion on this subject. It may likewise afford pleasure to the lovers of the Greek language and literature, ancient and modern, to observe that amidst all the disasters by which Greece has for centuries been assailed, she has never forgot the ancient honours of her name, and never allowed the light of learning to be wholly extinguished. The work from which the following items of information are drawn is entitled, *Cours de Littérature Grecque moderne, donné à Genève par Jacobaky Rizo Heroulos, ancien premier ministre des Hospodars Grecs de Valachie et de Moldavia. Genève. 1828.* It is believed to be the same author whose fine tragedy of 'Aspasia,' in modern Greek, has lately been republished here by Col. Negris.]

At the breaking out of the Greek revolution, the most flourishing colleges were those of Cydonia, of Smyrna, of Scio, of Couroutzesmé, of Bucharest, of Jassy, of Jannina, and of Athens.

All these schools being suitably organized, were directed by skilful professors, but the Lyceum of Scio surpassed all the rest, and might even be placed in competition with many of the universities of western Europe. It had fourteen professors, of whom the most distinguished were Vardalachos, Vamvas, Celepy, Nicolas Piccolo, and Julius David, a son of the painter of that name. Already had the public liberality headed by the generous Varvaky, endowed the University of Scio with a rich library and printing establishment. Already had several works been produced, and the plans of literary journals

matured, already were the hopes of the Sciotes beginning to be realized, when all at once the insurrection broke out. Amidst a frightful catastrophe Scio disappeared. The barbarians devastated the most wealthy, the most populous, the most civilized, and the most beautiful of the islands of the Archipelago. Seated on its ruins, afflicted humanity has sent forth her bitter lamentations, mingled with the most piercing cries for vengeance.

Besides the colleges of Greece, there were, in foreign countries also, several establishments for the instruction of Greeks. The cities of Venice, of Trieste, of Leghorn, of Vienna, and of Odessa, had all their Greek schools of more or less celebrity. The city of Venice, once the rival of Greece, but subsequently her protector amidst the wreck of empire which followed the taking of Constantinople, has preserved to this day the church, the printing establishment, and the college, which the Greeks anciently possessed there.

Towards the close of the last century, a Greek colony was formed at Trieste, by the exertions of the Abbe Homerus, of Smyrna. A church was soon after established, and a college founded, which reckoned among its professors the learned Asopus, one of the most accomplished writers of modern Greece.

The Greek merchants of Leghorn instituted a school in that city, to which the zeal, liberality, and public spirit of individuals, furnished handsome endowments.

Vienna contained two Greek churches, one for established residents, the other for strangers and transient visitors of the same nation. A Greek press has from an early period been established in this capital, which has likewise possessed a literary institution, under the direction of learned men, such as the Capetanakys, Alexandrides, Gobadalla, Athanasius of Stagira, Anthimos, Gazis, Theocletes, and Cokkinaky.

Odessa may almost be denominated a Greek colony. Under the tutelary genius of Governor Richlieu, this city was exceedingly flourishing, had a well organized college, and a theatre at which the performances were in modern Greek.

The colleges of Jassy and Bucharest have produced many learned and distinguished men. A school for mutual instruction was likewise established at Jassy, by Michael Soutzo, the last Greek hospodar of Moldavia, who paid out of his own resources, one half of the annual expense of the establishment.

It remains only to mention the University of Corfu, the only one of any importance now existing in Greece. The establishment of this institution, though favoured by the promises of the English government, by the efforts of Count Capodistria, himself a native of the republic of the seven islands, and by the zeal of Lord Guilford, was retarded by the malevolence of Maitland, lord high commissioner of the Ionian republic, until 1823, when it was finally accomplished, agreeably to the express direction of Mr. Canning. Lord Guilford was appointed chancellor of the institution, which he organized in a manner highly creditable, seeking out and inviting the most skilful professors to become its teachers, and sparing no efforts to improve the condition of the rising university. It is already well attended, and a preparatory academy is erected for the instruction of youth who are destined to become its members.

NOTICES.

Works in the Department of Education.

Murray's System of English Grammar. Improved and adapted to the present mode of Instruction in this branch of science. Larger Arrangement. By Enoch Pond. Worcester. Dorr & Howland. 1829. 12mo. pp. 226.

This work is one apparently intended for the elder classes in common schools. It embodies the substance of Murray's treatises, adapted to familiar and practical instruction by selection, new arrangement, and occasional alterations. The work is divided into lessons containing the primary statements and definitions, followed by appropriate questions, intended for a first course of grammar. To each lesson is attached under the head of 'Review,' whatever additional matter is required for a fuller knowledge of the subject. To this part also, questions are annexed.

As far as this method serves to render the subject of grammar more intelligible, or enables young learners to apply it more easily and directly to their own use of language, it is certainly advantageous. But the question arises whether the arrangement thus offered differs in any important respect from that adopted by every attentive instructor in making use of Murray's Grammar, whether he employs an introductory abridgment, or makes the requisite selection of lessons from the larger works. In either case, if the teacher does his duty he interrogates the scholars on what they learn, and he prescribes a suitable course of practice on the exercises which are furnished by Murray himself. We doubt, then, whether the Grammar before us was actually needed.

Murray's Grammar, we freely admit, may be improved in several respects. The views of etymology and of syntax taken by that eminent and useful writer for the young, were perhaps not so accurate as they might have been rendered by a more attentive consideration of the structure and idioms of the English language, as distinct from those of antiquity. But to rectify errors or supply omissions of this nature, demands the original research and the profound acquirements of Horn Tooke, with the chaste judgment and moderate temper of Mr. Murray, united in one author. These qualifications fall to few men in any country or in any community. Indeed, a thorough knowledge of the English language is one of the rarest acquisitions of our day. We have accomplished instructors in every language but our own; and this is equally true on both sides of the Atlantic. In arranging or abridging Murray's system of grammar, it would be better to let the original work stand as it is, in all its principal definitions and rules; and when the convenience of teaching renders it desirable that the instructor should use a manual adapted to his own views, that his book should not interfere with those of Murray. Satisfactory evidence of the risk incurred when Murray's Grammar undergoes alteration, may be traced in the inaccurate use of the word Arrangement, in

the title-page of the book before us, in the equally objectionable use of the word Review, in the body of the work, and in such examples as 'He run a mile.'

What seems to be most needed for the purposes of instruction, is to place the whole subject of grammar in such an order as is best adapted for the discipline and improvement of the mind in learning. The whole ought to be arranged in a series of inductive questions, leading the young mind to those results which are commonly given in books on grammar. The learner will thus perceive and understand every step of his progress, by doing something nearly like what he does when he works out sums in arithmetic, and arrives at general results himself, on the inductive method, as exemplified in Colburn. This subject, however, we must leave for the present. It will be resumed and discussed in detail, at another opportunity.

A second and a very valuable improvement on Murray's books on grammar, would be a better selection of exercises. In regard to these, we must briefly say that those given by Murray have two very prominent defects:—many of the erroneous examples given for correction are instances of inaccuracy into which even a child would never fall, unless his native tongue were not the English. What is needed here, is a course of practice embracing the correction of prevailing or customary mistakes and improprieties. Again, in the correct examples intended for parsing exercises, many of the sentences are detached scraps of phraseology, without a definite meaning, or they are extracts from works designed for grown people, and abound in abstract and unintelligible forms of expression. Rules and definitions must sometimes be difficult to understand or to apply; but examples and illustrations ought always to be at least perfectly intelligible. A book of more familiar exercises would be a great aid in teaching Murray's and other systems of grammar.*

Primary Dictionary, or Rational Vocabulary, consisting of nearly four thousand words, adapted to the comprehension of Children, and designed for the younger classes in Schools. By the Author of American Popular Lessons. New-York. Gallagher & White. 1828. 18mo. pp. 257.

We look with much interest for the school books of the author of Popular Lessons and Poetry for Schools. These publications possess an originality of character, and a happiness of adaptation to their purpose, which render them highly valuable. They are both, we think, susceptible of improvement; but they stand justly distinguished among American school books.

Of the work at present under notice we think less favourably. An English vocabulary or dictionary of any sort, when used as a school-book, should combine exercises in orthography, in orthoepy, and in definition. It ought to suit the purpose of a higher order of spelling-book, for spelling and pronouncing lessons; and it ought to contain

* Such as 'Frost's Exercises in Parsing,' a small volume (18mo) published by Hillard, Gray, & Co.

correct definitions, or rather explanations of the meaning of words, so as to form an intelligible and useful dictionary.

In this vocabulary, the strictly alphabetical order of the words interferes, of course, with their regular gradation as exercises in spelling and pronouncing; while the definitions are sometimes unnecessarily applied to words in familiar and common use, as 'Berry, any small fruit'; and, at other times, the extent to which the vocabulary is carried, seems to render the introduction of some words inappropriate for an elementary dictionary, thus 'Delineate,' 'Degenerate,' &c.

In other respects the work is valuable, particularly as regards the simplicity and plainness of the language used in definitions. This book, might, we think, be rendered very useful in a second edition, by dispensing with a good many of the easier words, and at the same time with some of the harder ones. Were the vocabulary thus reduced and arranged alphabetically, so far as to present, in succession, all words beginning with the letter A, for example, and a classification subordinate to this, to bring into successive groups all words of one syllable, then all those of two, &c.—were this change made, we should have the double advantage of an excellent spelling book, one rendered truly useful to children; while every end would be served which could be expected of a juvenile dictionary.

Elements of English Grammar, with Progressive Exercises in Parsing. By John Frost, Principal of the Mayhew Grammar School, Boston. Boston. Richardson & Lord. 1829. 18mo. pp. 108.

This little volume is in several respects excellently adapted to common and elementary schools. It is on the general plan of Murray, without assuming his name, but the whole book is simplified in language, so as to meet the capacities of children. To render it useful, however, as a means of awakening the attention of learners, and imparting a deep-felt intellectual interest to the study of grammar, it would need the aid of an accompanying volume of inductive interrogation, for the use of the teacher.

The progressive character of the exercises, and their exact adaptation to every rule and principle, give this little volume a peculiar claim to the attention of instructors.

If Murray's Abridgment is to be displaced, this work is one which may be advantageously adopted, since it contains what is valuable in Murray, presented in a simple and practical form. As far as grammar is an art, manuals like this are useful and desirable. But a clear and simple exposition of grammar as a science, is an aid of which instruction is yet destitute. To accomplish this object, regard must be paid by authors to the natural progress of the mind in acquiring knowledge. The method adopted must, in a word be that of induction, and not that of arbitrary assumption.

[Notices of the following valuable works are unavoidably deferred.]

The New Latin Tutor; or Exercises in Etymology, Syntax, and Prosody. Compiled in part from the best English

Works. With Additions. By Frederick P. Leverett, Principal of the Public Latin School in Boston. Boston. Hilliard, Gray, Little, & Wilkins. 1829. 12mo. pp. 348.

Elements of Geometry, with Practical Applications. For the use of Schools. By T. Walker, Teacher of Mathematics in the Round Hill School, at Northampton, Mass. Boston. Richardson & Lord. 1829. 12mo. pp. 104.

The National Orator, consisting of Selections adapted for Rhetorical Recitation. From the Parliamentary, Forensic, and Pulpit Eloquence of Great Britain and America. Interspersed with Extracts from the Poets. By Charles Dexter Cleveland. New-York. White, Gallagher, & White. 1829. 12mo. pp. 300.

Exposition of the System of Instruction and Discipline pursued in the University of Vermont. By the Faculty.

Books for Children.

The Tales of Peter Parley about America. With Engravings. Second Edition. Boston. S. G. Goodrich & Co. 1829. 18mo. pp. 160.

This entertaining little volume is now adapted for use in primary schools, by the addition of questions at the foot of each page, and an appendix of explanations, embracing some important parts of elementary knowledge connected with the stories. The plan of this work is calculated to render it useful as an attractive introduction to more advanced stages of education; and its copious engravings furnish many sources of pleasure for the imaginative minds of children. Some of the cuts, however, those in particular which represent scenes of cruelty and suffering, might be advantageously exchanged, in another edition, for delineations of objects or events connected with happier associations.

Game of Characteristics. [Arranged on Cards.] A. H. Maltby. New Haven.

This is a contrivance intended to illustrate the subject of biography. It consists of a selection of several of the most eminent names of ancient and of modern times, along with a number of terms expressive of characteristic traits of disposition, temper, or conduct. Each of the latter, as well as the former, is printed on a small card; and the game furnishes entertainment and instruction, by requiring, (in a form described on the envelope of the cards,) the application of the characteristics to the individuals whose names happen to be selected. An occasional hour of the time allotted to sedentary amusement, may be pleasantly and usefully spent in this way; and, especially if, in every

instance, an anecdote were read or recited, to illustrate the application of the characteristics.

[The following publications have been received ; and notice will be taken of them as opportunity shall admit.]

Annot and her Pupil, a simple Story. First American from the Edinburgh Edition. Salem. Whipple & Lawrence. 1829. 18mo. pp. 148.

The Good Children, or the Duties and Amusements of a Day. First American Edition. Lancaster. Carter, Andrews & Co. 1828. 18mo. pp. 60.

The Black Velvet Bracelet. By the Author of 'The Shower,' &c. Boston. Bowles & Dearborn. 1828. 18mo. pp. 164.

Isabella, or Filial Affection, A Tale. By the Author of the Prize, &c. Boston. Bowles & Dearborn. 1828. 18mo. pp. 160.

Mary Jones. Boston. Bowles & Dearborn. 1829. 18mo. pp. 107.

Procrastination. By the Author of the Shower, &c. Boston. Bowles & Dearborn. 1828. 18mo. pp. 44

James Colman, or the Reward of Perseverance. By the Author of John Williams. Boston. Bowles & Dearborn. 1828. 18mo. pp. 46.

Thomas Mansfield. By the Author of the Pet Lamb. Boston. Bowles & Dearborn. 1828. 18mo. pp. 13.

The Happy Valley. By the Author of Helen and Maria. Boston. Published by the Boston Sunday School Society. 1829. 18mo. pp. 40.

Mary and her Sister. By the Author of Helen and Maria. Boston. Wait, Greene & Co. 1829. 18mo. pp. 17.

The Warning. By the Author of the Well Spent Hour. Boston. Wait, Greene, & Co. 1829. 18mo. pp. 96.

Reformed Edward, or the House of Reformation. A True Story. Boston. N. S. Simpkins & Co. 1829. 18mo. pp. 18.

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VOL. IV.

ART. I.—*The Two Books of Francis Lord Verulam. Of the Proficiency and Advancement of Learning, Divine and Human.* London. Pickering. 1825. 8vo. pp. 402.

[Continued from page 242.]

IN our previous notice of this work, we have made liberal extracts from the author. We do not allude to the fact for the purpose of apologising for the course we have taken in this respect; for we are well satisfied that those who take interest enough in our views to follow us in our speculations, will be pleased to see these quotations. They contain much evidence of the peculiar character of Bacon's understanding; and with what we shall now give, will afford abundant proof of his deep and thorough knowledge of the powers and capacities of the human mind. Indeed, his writings are much more remarkable for this quality, which seems to pervade almost every page, than for the views they contain of natural philosophy. We express our strong conviction when we say, that Reid, and Stewart, and Brown, though they have built up what is called a philosophy of mind upon induction, have yet but skimmed the surface of the profoundness of Bacon's views. It was from a knowledge of the powers of the human mind, that he deduced the true laws of philosophizing. The vast discoveries to which these laws have led in natural science, have again in their turn enlarged and enriched the philosophy of mind. By the philosophy of mind, we mean the general state of the science of metaphysics, as it is understood in the learned world. In say-

ing that Bacon was far in advance of the writers of the present age in his knowledge of the human mind, we are well aware that we are saying what many will be unwilling to admit. But we think that a little more examination would satisfy them of the truth of this assertion. We have said that the modern discoveries in natural science have improved the general state of the science of metaphysics. Indeed, we regard natural science as the true ultimate and foundation of metaphysics. And as the accurate knowledge which is now possessed, of the laws of nature, was not disclosed to Bacon, his views of mental philosophy must have wanted the strength and precision, which an enlightened consciousness of this foundation alone can give. But without this aid, they were far more deep and penetrating than those of many who regard the science of metaphysics as altogether built up since his day. There are states in which the mind, as it were by inspiration, catches a glimpse of what it is afterwards to receive, and rationally and systematically to comprehend. Bacon stands with respect to the present state of science, in a relation somewhat analogous to that of this state of foretaste or conception, to the state of full possession. How bright and clear his anticipations were, few can realize. But that he was enabled to make them from his knowledge of mental philosophy, is not mere matter of conjecture. There was no other ground upon which he could stand and survey the pretensions of science, and pronounce upon their deficiencies. There was no other ground upon which he could stand, and point out as upon a map, the subjects of legitimate examination and the process of inquiry. We do not mean to say that he was infallible and free from error. He fell into many errors which his knowledge of natural philosophy could not correct. But there are only few men who would thus have erred; for there are but few who possess his power of sustaining a flight into the region of causes and activities. But this was the atmosphere in which Bacon lived and breathed.

We are well aware that there are those who call themselves philosophers, Baconian philosophers too, who are conversant, and profess to be conversant only with effects. But this is a most grievous abuse of names. Though Bacon taught us to observe effects, and to make experiments with a view of establishing theories, and thus apparently to reason from effects to causes, yet this process with him was not the end; but having gained this vantage-ground, he would again descend from causes to effects with the light and certainty of living

experience. Thus he observes, that 'all true and fruitful natural philosophy hath a double scale or ladder, ascendant and descendant ; ascending from experiments to the invention of causes, and descending from causes to the invention of new experiments.' In another place he says, that 'a faculty of wise interrogating is half a knowledge ;' and adopts the sentiment of Plato, that 'whosoever seeketh, knoweth that which he seeketh for, in a general notion ; else how shall he know it when he hath found it ?' Now this we take to be strictly true of all discoveries that are made in a philosophical manner. Many discoveries have been made in nature, which were hit upon apparently by the merest accident. But they also appeared at first as anomalous facts, at variance with the uniform laws of nature. And they could never take their place and rank, as matters of science, till they had been viewed from what Bacon calls the 'descendant scale or ladder of natural philosophy.' Before this they would necessarily appear to be contradictory to previously established theories. Hence the necessity of ascending into the region of causes in order truly to understand any discovery, or to reduce facts to a rational theory. Hence, too, the propriety of denominating this view of the ultimate facts and experiments, which is taken from this higher ground, *the discovery*. For a man cannot with propriety be said to have discovered new truths, while these new truths cannot be viewed by him in harmony with all those other principles which he had previously received and which he still regards as truths. Or, if his former principles were false, and thus irreconcilable with the new, he cannot be said to have made the discovery, till the false have been discarded and in this manner harmony has been restored. Thus in all cases, in order to the true discovery of new principles and their reduction to a science, it is necessary that the man should be elevated above the common level of the mere discovery or witnessing of the outward, natural experiment.

'Another error which doth succeed that which we last mentioned, is, that after the distribution of particular arts and sciences, men have abandoned universality, or "*philosophia prima*" (the chief philosophy); which cannot but cease and stop all progression. For no perfect discovery can be made upon a flat or level : neither is it possible to discover the more remote and deeper parts of science, if you stand but upon the level of the same science, and ascend not to a higher science.'

pp. 55, 56.

We are now approaching the consideration of Bacon's peculiar qualifications for philosophizing. It was 'universality' or 'philosophia prima,' in which Bacon excelled. Nay, it is this in which he now excels; for the great mass of those who regard themselves as his followers, are now standing upon the 'flat or level' upon which no discoveries can be made. We are aware that it is somewhat difficult to understand precisely what Bacon meant by 'universality,' to the abandonment and neglect of which, he imputed in so great a degree the deficiencies of art and science. But he did not use the word as a mere empty sound; and further extracts will doubtless aid the reader in coming to a true conception of his meaning.

'The part of Human Philosophy which is Rational, is of all knowledges, to the most wits, the least delightful, and seemeth but a net of subtilty and spinosity. For as it was truly said, that knowledge is "pabulum animi" (the food of the mind); so in the nature of men's appetite to this food, most men are of the taste and stomach of the Israelites in the desert, that would fain have returned "ad ollas carnum" (to the flesh pots), and were weary of manna; which, though it were celestial, yet seemed less nutritive and comfortable. So generally men taste well knowledges that are drenched in flesh and blood, civil history, morality, policy, about the which men's affections, praises, fortunes, do turn and are conversant; but this same "lumen siccum" (dry light) doth parch and offend most men's watery and soft natures. But, to speak truly of things as they are in worth, rational knowledges are the keys of all other arts; for as Aristotle saith aptly and elegantly, "That the hand is the instrument of instruments, and the mind is the form of forms;" so these be truly said to be the art of arts: neither do they only direct, but likewise confirm and strengthen; even as the habit of shooting doth not only enable to shoot a nearer shoot, but also to draw a stronger bow.

'The arts intellectual are four in number; divided according to the ends whereunto they are referred: for man's labor is to invent that which is sought or propounded; or to judge that which is invented; or to retain that which is judged; or to deliver over that which is retained. So as the arts must be four; art of inquiry or invention; art of examination or judgment; art of custody or memory; and art of elocution or tradition.

'Invention is of two kinds, much differing; the one, of arts and sciences; and the other, of speech and arguments. The former of these I do report deficient; which seemeth to me to be such a deficiency as if, in the making of an inventory touch-

ing the state of a defunct, it should be set down, that there is no ready money. For as money will fetch all other commodities, so this knowledge is that which should purchase all the rest. And like as the West-Indies had never been discovered, if the use of the mariner's needle had not been first discovered, though the one be vast regions, and the other a small motion; so it cannot be found strange if sciences be no farther discovered, if the art itself of invention and discovery hath been passed over.

'That this part of knowledge is wanting, to my judgment standeth plainly confessed: for first, logic doth not pretend to invent sciences, or the axioms of sciences, but passeth it over with a "*cuique in sua arte credendum*" (every man is to be trusted in his own art). And Celsus acknowledgeth it gravely, speaking of the empirical and dogmatical sects of physicians, "That medicines and cures were first found out, and then after the reasons and causes were discoursed; and not the causes first found out, and by light from them the medicines and cures discovered." And Plato, in his *Theætetus*, noteth well, "That particulars are infinite, and the higher generalities give no sufficient direction; and that the pith of all sciences, which make the artsman differ from the inexpert, is in the middle propositions, which in every particular knowledge are taken from tradition and experience." And therefore we see, that they which discourse of the inventions and originals of things, refer them rather to chance than to art, and rather to beasts, birds, fishes, serpents, than to men.

"*Dictamnium genetrix Cretæa carpit ab Ida,
 Puberibus caulem foliis et flore comantem
 Purpureo: non illa feris incognita capris
 Germina, cum tergo volucres hæsere sagittæ:*"
 (A branch of sov'reign dittany she bore,
 From Ida gather'd on the Cretan shore.
 Luxuriant leaves the taper stalk array;
 The stalk in flow'rs the flow'rs in purple gay.
 The goats when pierc'd at distance by the dart,
 Apply the med'cine to the wounded part).

So that it was no marvel, the manner of antiquity being to consecrate inventors, that the Ægyptians had so few human idols in their temples, but almost all brute.

"*Omnigenumque Deum monstra, et la trator Anubis,
 Contra Neptunam, et Venerem, contraque Minervam, &c.*"
 (Against great Neptune, in his strength array'd
 And beauteous Venus, and the blue-ey'd maid,
 Engage the dog Anubis, on the floods,
 And the lewd herd of Ægypt's monster gods).
 And if you like better the tradition of the Grecians, and ascribe

the first inventions to men, yet you will rather believe that Prometheus first struck the flints, and marvelled at the spark, than that when he first struck the flints he expected the spark: and therefore we see the West-Indian Prometheus had no intelligence with the European, because of the rareness with them of flint, that gave the first occasion. So as it should seem, that hitherto men are rather beholden to a wild goat for surgery, or to a nightingale for music, or to the ibis for some part of physic, or to the pot-lid that flew open, for artillery, or generally to chance, or anything else, than to logic, for the invention of arts and sciences. Neither is the form of invention which Virgil describeth much other:

“ Ut varias usus meditando extunderet artes
Paulatim: ”

(That studious want might useful arts contrive).

For if you observe the words well, it is no other method than that which brute beasts are capable of, and do put in use; which is a perpetual intending or practising some one thing, urged and imposed by an absolute necessity of conservation of being: for so Cicero saith very truly, “ Usus uni rei deditus et naturam et artem sæpe vincit ” (practice applied to one object often outstrips nature and art). And therefore if it be said of men,

“ Labor omnia vincit

Improbis, et duris urgens in rebus egestas:

(What cannot ceaseless toil, and pressing need!)

it is likewise said of beasts, “ Quis psittaco docuit suum *χαῖρ* ” (who taught the parrot to say Good morrow?) Who taught the raven in a drought to throw pebbles into a hollow tree, where she espied water, that the water might rise so as she might come to it? Who taught the bee to sail through such a vast sea of air, and to find the way from a field in flower, a great way off, to her hive? Who taught the ant to bite every grain of corn that she burieth in her hill, lest it should take root and grow? Add then the word ‘extundere’ (to hammer out), which importeth the extreme difficulty, and the word ‘paulatim’ (by degrees), which importeth the extreme slowness, and we are where we were, even among the Egyptians’ gods; there being little left to the faculty of reason, and nothing to the duty of art, for matter of invention.

‘Secondly, the induction which the logicians speak of, and which seemeth familiar with Plato, (whereby the principles of sciences may be pretended to be invented, and so the middle propositions by derivation from the principles;) their form of induction, I say, is utterly vicious and incompetent: wherein their error is the fouler, because it is the duty of art to perfect

and exalt nature ; but they contrariwise have wronged, abused and traduced nature. For he that shall attentively observe how the mind doth gather this excellent dew of knowledge, like unto that which the poet speaketh of, "*Aërei mellis cœlestia dona*" (the heavenly gift of aërial honey), distilling and contriving it out of particulars natural and artificial, as the flowers of the field and garden, shall find that the mind of herself by nature doth manage and act an induction much better than they describe it. For to conclude upon an enumeration of particulars, without instance contradictory, is no conclusion, but a conjecture ; for who can assure, in many subjects, upon those particulars which appear of a side, that there are not on the contrary side which appear not ? As if Samuel should have rested upon those sons of Jesse which were brought before him, and failed of David, which was in the field. And this form, to say truth, is so gross, as it had not been possible for wits so subtile as to have managed these things to have offered it to the world, but that they hasted to their theories and dogmaticals, and were imperious and scornful towards particulars ; which their manner was to use but as "*lictores and viatores*," for sergeants and whiffers, "*ad summovendam turbam*" (to drive away the crowd), to make way and make room for their opinions, rather than in their true use and service. Certainly it is a thing may touch a man with a religious wonder, to see how the footsteps of seducement are the very same in divine and human truth : for as in divine truth man cannot endure to become as a child ; so in human, they reputed the attending the inductions whereof we speak, as if it were a second infancy or childhood.

'Thirdly, allow some principles or axioms were rightly induced, yet nevertheless certain it is, that middle propositions cannot be deduced from them in subject of nature by syllogism, that is, by touch and reduction of them to principles in a middle term. It is true that in sciences popular, as moralities, laws, and the like, yea, and divinity (because it pleaseth God to apply himself to the capacity of the simplest), that form may have use ; and in natural philosophy likewise, by way of argument or satisfactory reason, "*Quæ assensum parit, operis efflata est*" (what produces assent, has accomplished its object :) but the subtilty of nature and operations will not be chained in those bonds : for arguments consist of propositions, and propositions of words ; and words are but the current tokens or marks of popular notions of things ; which notions, if they be grossly and variably collected out of particulars, it is not the laborious examination either of consequences of arguments, or of the truth of propositions, that can ever correct that error, being, as

the physicians speak, in the first digestion : and therefore it was not without cause, that so many excellent philosophers became sceptics and academics, and denied any certainty of knowledge or comprehension ; and held opinion, that the knowledge of man extended only to appearances and probabilities. It is true that in Socrates it was supposed to be but a form of irony, "*Scientiam dissimulando simulavit*," (he made pretensions to knowledge by dissembling it ;) for he used to disable his knowledge, to the end to enhance his knowledge ; like the humor of Tiberius in his beginnings, that would reign, but would not acknowledge so much : and in the latter Academy, which Cicero embraced, this opinion also of "*acatalepsia*" (incomprehensibleness), I doubt, was not held sincerely : for that all those which excelled in "*copia*" (abundance) of speech seem to have chosen that sect, as that which was fittest to give glory to their eloquence and variable discourses ; being rather like progresses of pleasure, than journeys to an end. But assuredly many scattered in both Academies did hold it in subtilty and integrity : but here was their chief error ; they charged the deceit upon the senses ; which in my judgment, notwithstanding all their cavillations, are very sufficient to certify and report truth, though not always immediately, yet by comparison, by help of instrument, and by producing and urging such things as are too subtile for the sense to some effect comprehensible by the sense, and other like assistance. But they ought to have charged the deceit upon the weakness of the intellectual powers, and upon the manner of collecting and concluding upon the reports of the senses. This I speak, not to disable the mind of man, but to stir it up to seek help : for no man, be he never so cunning or practised, can make a straight line or perfect circle by steadiness of hand, which may be easily done by help of a ruler or compass.

' This part of invention, concerning the invention of sciences, I purpose, if God give me leave, hereafter to propound, having digested it into two parts ; whereof the one I term "*experientia literata*" (learned experience,) and the other, "*interpretatio naturæ*" (the interpretation of nature) : the former being but a degree and rudiment of the latter. But I will not dwell too long, nor speak too much upon a promise.

' The invention of speech or argument is not properly an invention ; for to invent is to discover that we know not, and not to recover or resummon that which we already know : and the use of this invention is no other but, out of the knowledge whereof our mind is already possessed, to draw forth or call before us that which may be pertinent to the purpose which we take into our consideration. So as, to speak truly, it is no invention, but remembrance or suggestion, with an application ;

which is the cause why the schools do place it after judgment, as subsequent and not precedent. Nevertheless, because we do account it a chace, as well of deer in an inclosed park, as in a forest at large, and that it hath already obtained the name, let it be called invention ; so as it be perceived and discerned, that the scope and end of this invention is readiness and present use of our knowledge, and not addition or amplification thereof.'

pp. 208-218.

By 'rational knowledges,' 'arts intellectual,' and more especially by the 'invention of arts and sciences,' in the preceding extract, Bacon seems to understand something very similar to, if not precisely the same as, by 'universality' or 'philosophia prima.' Invention, such as is here referred to, acknowledges no kindred with necessity, but would do honor to the noblest pedigree. The same thing is again referred to, and perhaps more fully illustrated in the following remarks.

'But because the distributions and partitions of knowledge are not like several lines that meet in one angle, and so touch but in a point ; but are like branches of a tree, that meet in a stem, which hath a dimension and quantity of entireness and continuance, before it come to discontinue and break itself into arms and boughs ; therefore it is good, before we enter into the former distribution, to erect and constitute one universal science, by the name of "*Philosophia prima*," primitive or summary philosophy, as the main and common way, before we come where the ways part and divide themselves ; which science, whether I should report as deficient or no, I stand doubtful.

'For I find a certain rhapsody of natural theology, and of diverse parts of logic ; and of that part of natural philosophy which concerneth the principles ; and of that other part of natural philosophy which concerneth the soul or spirit ; all these strangely commixed and confused : but being examined, it seemeth to me rather a depredation of other sciences, advanced and exalted unto some height of terms, than anything solid or substantive of itself.

'Nevertheless, I cannot be ignorant of the distinction which is current, that the same things are handled but in several respects. As for example, that logic considereth of many things as they are in notion, and this philosophy as they are in nature ; the one in appearance, the other in existence : but I find this difference better made than pursued. For if they had considered quantity, similitude, diversity, and the rest of those external characters of things, as philosophers, and in nature, their inquiries must of force have been of a far other kind than they are.

‘For doth any of them, in handling quantity, speak of the force of union, how and how far it multiplieth virtue? Doth any give the reason, why some things in nature are so common, and in so great mass, and others so rare, and in so small quantity? Doth any, in handling similitude and diversity, assign the cause why iron should not move to iron, which is more like, but move to the loadstone, which is less like? Why in all diversities of things there should be certain particles in nature, which are almost ambiguous to which kind they should be referred? But there is a mere and deep silence touching the nature and operation of those common adjuncts of things, as in nature; and and only a resuming and repeating of the force and use of them in speech or argument.

‘Therefore, because in a writing of this nature I avoid all subtilty, my meaning touching this original or universal philosophy is thus, in a plain and gross description by negative: “That it be a receptacle for all such profitable observations and axioms as fall not within the compass of any of the special parts of philosophy or sciences, but are more common and of a higher stage.”

‘Now that there are many of that kind, need not to be doubted. For example; is not the rule, “*Si inæqualibus æqualia addas, omnia erunt inæqualia*” (if to unequals you add equals, all will be unequal), an axiom as well of justice as of the mathematics? And is there not a true coincidence between commutative and distributive justice, and arithmetical and geometrical proportion? Is not that other rule, “*Quæ in eodum tertio conveniunt, et inter se conveniunt*” (things which are equal to a third thing, are equal to one another), a rule taken from the mathematics, but so potent in logic as all syllogisms are built upon it? Is not the observation, “*Omnia mutantur, nil interit*” (all things are changed, nothing perishes), a contemplation in philosophy thus, that the quantum of nature is eternal? in natural theology thus, that it requireth the same omnipotence to make somewhat nothing, which at the first made nothing somewhat? according to the Scripture, “*Didici quòd omnia opera, quæ fecit Deus, preseverent in perpetuum; non possumus eis quicquam addere nec auferre*” (I know that, whatsoever God doeth, it it shall be forever: nothing can be put to it, nor anything taken from it.)

‘Is not the ground, which Machiavel wisely and largely discourseth concerning governments, that the way to establish and preserve them, is to reduce them “*ad principia*” (to first principles), a rule in religion and nature, as well as in civil administration? Was not the Persian magic a reduction or correspondence of the principles and architectures of nature to the rules and policy of governments? Is not the precept of a mu-

sician, to fall from a discord or harsh accord, upon a concord or sweet accord, alike true in affection? Is not the trope of music, to avoid or slide from the close or cadence, common with the trope of rhetoric, of deceiving expectation? Is not the delight of the quavering upon a stop in music, the same with the playing of light upon the water?

“Splendet tremulo sub lumine pontus :”

(The silver splendors tremble o'er the tides.)

Are not the organs of the senses of one kind with the organs of reflection, the eye with a glass, the ear with a cave or strait determined and bounded? Neither are these only similitudes, as men of narrow observation may conceive them to be, but the footsteps of nature, treading or printing upon several subjects or matters.

‘This science, therefore, as I understand it, I may justly report as deficient; for I see sometimes the profounder sort of wits, in handling some particular argument, will now and then draw a bucket of water out of this well for their present use; but the spring-head thereof seemeth to me not to have been visited; being of so excellent use, both for the disclosing of nature, and the abridgement of art.

‘This science being therefore first placed as a common parent, like unto Berecynthia, which had so much heavenly issue,

“Omnes cœlicolas, omnes super alta tenentes :”

(A shining train, who fill the blest abodes):

we may return to the former distribution of the three philosophies, divine, natural, and human.’—pp. 147–152.

The distinction which is here made between ‘several lines that meet in one angle, and so touch but in a point,’ and ‘the branches of a tree that meet in a stem, which hath a dimension and quantity of entireness and continuance,’ is certainly a most important one. There is no parallelism between the two things. A branch is not, in any sense of the word, a stem. The distinction between them is the same as between cause and effect; and the science of which Bacon is speaking, and of which he certainly had some knowledge, is as a stem through which all the other sciences are to be produced, and on which they are to be supported; or it stands as ‘a common parent, like unto Berecynthia which had so much heavenly issue.’ When a man is in this science, the discovery of sciences which lie in the planes below where he is situated, is a matter of course. ‘He does not stumble upon them accidentally, or by virtue of endless experiments repeated without object and leading he knows not whither, but being himself in

the causes of things, he can foresee the effects. We have already alluded to the proverb that 'necessity is the mother of invention.' In the usual mode of discovering natural science this is strictly true; and it may be added that men are mere slaves in the work. Indeed they hardly make any pretensions to rationality, any more than freedom, but follow their experiments, as it were with their eyes closed. In this respect, it is very evident that the philosophers of the present day are far behind their boasted leader. They have received his cautions against theorizing according to the strictness of the letter, without drinking into his spirit. Theories are not to be framed without regard to facts and experiments, after the manner of the ancients, and then advocated and supported from personal interest and a love of reputation. This is but another kind of slavery—the slavery of prejudice and self-conceit. Neither are facts and experiments to be collected without regard to theories. But theories should be framed from rational views of the causes which are continually operating and producing effects, and the testimony of facts and experiments should ultimately determine their character. In this manner a man may labour without toil, for he will receive strength from the consciousness of continual progress.

We regard these views as so very important, that we shall make another extract the more fully to illustrate them.

'For Natural Prudence, or the part operative of natural philosophy, we will divide it into three parts, experimental, philosophical, and magical; which three parts active have a correspondence and analogy with the three parts speculative, natural history, physic, and metaphysic: for many operations have been invented, sometimes by a casual incidence and occurrence, sometimes by a purposed experiment; and of those which have been found by an intentional experiment, some have been found out by varying or extending the same experiment, some by transferring and compounding diverse experiments the one into the other, which kind of invention an empiric may manage.

'Again, by the knowledge of physical causes there cannot fail to follow many indications and designations of new particulars, if men in their speculation will keep one eye upon use and practice. But these are but coastings along the shore, "*pre-mendo littus iniquum*" (keeping too close to the dangerous coast): for, it seemeth to me, there can hardly be discovered any radical or fundamental alterations and innovations in nature,

either by the fortune and essays of experiments, or by the light and direction of physical causes.

'If, therefore, we have reported metaphysic deficient, it must follow that we do the like of natural magic, which hath relation thereunto. For as for the natural magic whereof now there is mention in books, containing certain credulous and superstitious conceits and observations of sympathies, and antipathies, and hidden properties, and some frivolous experiments, strange rather by disguisement than in themselves; it is as far differing in truth of nature from such a knowledge as we require, as the story of king Arthur of Britain, or Hugh of Bourdeaux, differs from Cæsar's Commentaries in truth of story. For it is manifest that Cæsar did greater things "de vero" (in reality) than those imaginary heroes were feigned to do; but he did them not in their fabulous manner. Of this kind of learning the fable of Ixion was a figure, who designed to enjoy Juno, the goddess of power; and instead of her had copulation with a cloud, of which mixture were begotten centaurs and chimeras.

'So whosoever shall entertain high and vaporious imaginations, instead of a laborious and sober inquiry of truth, shall beget hopes and beliefs of strange and impossible shapes. And therefore we may note in these sciences which hold so much of imagination and belief, as this degenerate natural magic, alchemy, astrology, and the like, that in their propositions the description of the means is ever more monstrous than the pretence or end.

'For it is a thing more probable, that he that knoweth well the natures of weight, of colour, of pliant and fragile in respect of the hammer, of volatile and fixed in respect of the fire, and the rest, may superinduce upon some metal the nature and form of gold by such mechanic as belongeth to the production of the natures afore rehearsed, than that some grains of the medicine projected should in a few moments of time turn a sea of quicksilver or other materials into gold: so it is more probable, that he that knoweth the nature of arefaction, the nature of assimilation of nourishment to the thing nourished, the manner of increase and clearing of spirits, the manner of the depredations which spirits make upon the humors and solid parts, shall by ambages of diets, bathings, anointings, medicines, motions, and the like, prolong life, or restore some degree of youth or vivacity, than that it can be done with the use of a few drops or scruples of a liquor or receipt. To conclude, therefore, the true natural magic, which is that great liberty and latitude of operation which dependeth upon the knowledge of forms, I may report deficient, as the relative thereof is.

'To which part, if we be serious, and incline not to vanities

and plausible discourse, besides the deriving and deducing the operations themselves from metaphysic, there are pertinent two points of much purpose, the one by way of preparation, the other by way of caution: the first is, that there be made a calendar, resembling an inventory of the estate of man, containing all the inventions, being the works or fruits of nature or art, which are now extant, and whereof man is already possessed; out of which doth naturally result a note, what things are yet held impossible, or not invented: which calendar will be the more artificial and serviceable, if to every reputed impossibility you add what thing is extant which cometh the nearest in degree to that impossibility: to the end that by these optatives and potentials man's inquiry may be the more awake in deducing direction of works from the speculation of causes: and secondly, that those experiments be not only esteemed which have an immediate and present use, but those principally which are of most universal consequence for invention of other experiments, and those which give most light to the invention of causes; for the invention of the mariner's needle, which giveth the direction, is of no less benefit for navigation than the invention of the sails, which give the motion.

'Thus have I passed through natural philosophy, and the deficiencies thereof; wherein if I have differed from the ancient and received doctrines, and thereby shall move contradiction,—for my part, as I affect not to dissent, so I purpose not to contend. If it be truth,

“Non canimus surdis, respondent omnia sylvæ:”

(Not to the deaf our notes in vain we sing,

Each wood shall with responsive echoes ring.)

The voice of nature will consent, whether the voice of man do or no. And as Alexander Borgia was wont to say of the expedition of the French for Naples, that they came with chalk in their hands to mark up their lodgings, and not with weapons to fight: so I like better that entry of truth which cometh peaceably, with chalk to mark up those minds which are capable to lodge and harbor it, than that which cometh with pugnacity and contention.'—pp. 172–177.

We here have a very clear expression of Bacon's opinion in relation to those discoveries which are made by the light of physical causes. The natural magic which he speaks of, seems to be but another name for his 'philosophia prima.' It is indeed a most remarkable fact, that so large a portion of the professed followers of Bacon, and those too who are perpetually boasting of the grand discoveries of the inductive system, should be men who ascend no higher than physical

causes, and suppose that they honour him as their master in philosophy, while they profess to do no more. It is useless to reason with such men, but if they could be persuaded to read a single volume of Bacon's works, they would find him to be quite a different man from what they suppose. The exalted sentiment, which fills the concluding paragraph last quoted, must be interesting to those who can appreciate the state of him who wrote it. To those who cannot, nothing which we could add, would render it interesting or intelligible.

Bacon repeats the Fable of Æsop, respecting the husbandman, that,

‘When he died, told his sons, that he had left unto them gold, buried under ground in his vineyard; and they digged over all the ground, and gold they found none; but by reason of their stirring and digging the mould about the roots of their vines, they had a great vintage the year following.’—pp. 50, 51.

We fear that our remarks in relation to the state of modern philosophy may be imputed by some to ungenerous or envious motives, and by others may be misunderstood. We therefore refer to this fable, as well calculated to illustrate our meaning. While the husbandman is digging for gold, he may indeed essentially benefit his lands. But his labour is the vilest drudgery. He is the constant dupe of expectations which are never to be gratified, and of hopes that are never to be realized. He does not indeed labour altogether in vain; but he is a slave, because he knows neither the amount nor the nature of his wages. Now what we intended to say was, that the philosophers of the present day, have lost the spirit of Bacon. They are conversant only with effects. They are toiling and labouring to as little purpose, or to a purpose as wide of their expectations and hopes, as was the husbandman in the fable. And what we would have them to become, is, comparatively speaking, what every one sees that he should have been. They should be in a state to ‘know in some general form’ that which they are in pursuit of. There is a science as appropriate to the experimental philosopher, as the science of agriculture is to the husbandman; and this is what Bacon terms ‘*Philosophia prima*’ or the ‘invention of arts and sciences.’

In the following passage we see what Bacon regarded as necessary in order to the cultivation of this heart and root of

philosophy. We see also another proof of his high estimation of the dignity and value of true learning.

‘First, therefore, amongst so many great foundations of colleges in Europe, I find strange that they are all dedicated to professions, and none left free to arts and sciences at large. For if men judge that learning should be referred to action, they judge well; but in this they fall into the error described in the ancient fable, in which the other parts of the body did suppose the stomach had been idle, because it neither performed the office of motion, as the limbs do, nor of sense, as the head doth; but yet, notwithstanding, it is the stomach that digesteth and distributeth to all the rest: so if any man think philosophy and universality to be idle studies, he doth not consider that all professions are from thence served and supplied. And this I take to be a great cause that hath hindered the progression of learning, because these fundamental knowledges have been studied but in passage. For if you will have a tree bear more fruit than it hath used to do, it is not anything you can do to the boughs, but it is the stirring of the earth, and putting new mould about the roots, that must work it. Neither is it to be forgotten, that this dedicating of foundations and donations to professory learning hath not only had a malign aspect and influence upon the growth of sciences, but hath also been prejudicial to states and governments. For hence it proceedeth that princes find a solitude in regard of able men to serve them in causes of state, because there is no education collegiate which is free; where such, as were so disposed might give themselves to histories, modern languages, books of policy and civil discourse, and other the like enablements unto service of state.

‘And because founders of colleges do plant, and founders of lectures do water, it followeth well in order to speak of the defect which is in public lectures; namely, in the smallness and meanness of the salary or reward which in most places is assigned unto them; whether they be lectures of arts, or of professions. For it is necessary to the progression of sciences that readers be of the most able and sufficient men, as those which are ordained for generating and propagating of sciences, and not for transitory use. This cannot be, except their condition and endowment be such as may content the ablest man to appropriate his whole labour, and continue his whole age in that function and attendance; and therefore must have a proportion answerable to that mediocrity or competence of advancement, which may be expected from a profession or the practice of a profession. So as, if you will have sciences flourish, you must observe David’s military law, which was, “That those which

staid with the "carriage should have equal part with those which were in the action;" else will the carriages be ill attended. So readers in science are indeed the guardians of the stores and provisions of sciences, whence men in active courses are furnished, and therefore ought to have equal entertainment with them; otherwise, if the fathers in sciences be of the weakest sort, or be ill-maintained,

"Et patrum invalidi referent jejunia nati:"

(From feeble fathers spring imbecile sons.)'

pp. 109-111.

One reason why more serious efforts have not been made to place philosophy and universality upon a solid and true foundation is, because they hold out but a small prospect of an early reward. The prosecution of them as studies promises much in the way of important results; but these encouragements are not in their nature of an imposing character. We now speak of philosophy, in the general, abstract sense, in which Bacon used the word. And by results we mean those external, natural effects, which terminate in mechanical operations, and become immediate sources of pecuniary profit, and attract the admiration of the multitude. Results of this character, together with those which are merely striking and showy without being useful, are always gratifying to the pride and ambition of pretended philosophers. And perhaps we ought to add, that the genius of the laws and institutions of this country, especially when regarded in connexion with the present state of society, is such as to expose us to a double share of this failing. We do not love to investigate matters thoroughly. Everything around us is, in a certain sense, immature. We have not well considered the importance of a good digestion. We insist upon having the profits; and we are often gathering and counting our fruits, while we should be stirring the earth about the roots of the tree, and putting in new mould, that it may become ripe and mellow upon its native bough. It is the same disposition which leads us to make philosophy a sport. In this way it has come to be the profession of many to teach it, who know little of its power. We have lectures upon the several departments of natural philosophy, which consist merely of an artificial arrangement of technical terms, and the repetition of dazzling experiments, without attempting to teach the pupils to abstract their views and reason for themselves. We do not object to experiments for the illustration of principles; nor to familiar instruction in

the elements of natural philosophy. But we do most seriously object to regarding every one as a philosopher who uses the elementary terms of science with familiarity, and lectures to the astonishment of a popular audience. Philosophy has not thus descended from her true station. She has indeed come down to labour in the common walks, and for the common benefit of man; and she has clothed herself in a garment suited to her employment. But let us not suppose that she has therefore changed her essential character. Though we see her engaged in more external works, let us not forget her heavenly origin, nor whence it is that she derives her power. It is impossible from the very nature of the case, that she should do these things without bestowing, upon her false pretenders, the power of deceptive imitations. The power of jugglery and enchantment has been coexistent with the power of working miracles. But all this only increases the necessity for a spirit of true discrimination.

This love of show, for which many pretended scholars are more remarkable, than for their love of philosophy and true learning, did not escape the notice of so keen an observer as Bacon. A single paragraph will suffice to show his estimation of such arts.

‘There hath been also laboured and put in practice a method which is not a lawful method, but a method of imposture; which is, to deliver knowledges in such manner, as men may speedily come to make a show of learning who have it not: such was the travail of Raymundus Lullius, in making that art which bears his name; not unlike to some books of typocosmy which have been made since; being nothing but a mass of words of all arts, to give men countenance, that those which use the terms might be thought to understand the art; which collections are much like a fripper’s or broker’s shop, that hath ends of every thing, but nothing of worth.’—p. 247.

Bacon also complains of the habit of a too hasty a reduction of knowledge to arts and methods. But the best idea of his meaning will be derived from his own words.

‘Another error, of a diverse nature from all the former, is the over early and peremptory reduction of knowledge into arts and methods; from which time commonly sciences receive small or no augmentation. But as young men, when they knit and shape perfectly, do seldom grow to a farther stature; so knowledge, while it is in aphorisms and observations, it is in growth;

but when it is once comprehended in exact methods, it may perchance be farther polished and illustrated, and accommodated for use and practice; but it increaseth no more in bulk and substance.'—p. 55.

It may be said indeed in reply to this caution, that his own principles of theorizing have provided an adequate remedy. Theories are now held as resulting from, and resting upon actual facts and observations. Of course, whenever any new facts are disclosed which prove to be at variance with a pre-established theory, the theory is at once set aside. One of the foundations upon which it was acknowledged to stand, has been removed, and all those who made this acknowledgment truly, must admit that it stands no longer. This is, in a certain sense, true. Still there is much truth in the paragraph last quoted, the force and propriety of which lies a little deeper than the level of such a reply seems to contemplate. Perhaps we shall most easily succeed in explaining our meaning, if instead of the arts and sciences as they exist in the abstract form, we regard them for a moment, as they exist in the mind of a single individual. And, if instead of the 'reduction of knowledge into arts and methods,' by the common consent of scientific men, or instead of the common, universal progress of knowledges into arts and sciences which is going on in the learned world, we regard the progress of these things in a single mind. For it is to be recollected that every man has a certain process to go through by himself, before he can truly understand any science. And there is a close analogy between this process, in every step, and the process of the science itself in the abstract. For the abstract science itself, at least so far as any idea can be formed of it, is nothing but a collection of those truths and knowledges which different individuals have first seen by themselves. These are arranged and systematized and preserved in printed books. The facts may all exist on which the system is founded. But it must be obvious that it does not follow that the arrangement and inferences are all true. While a pupil is learning a science, he should endeavour to receive from his instructor as little as possible of that which is peculiar to him as an individual, in the form and arrangement of his own thoughts. He should thus acquire the abstract principles of a science which are to be filled with life and moulded into a particular form, by himself. The moment he follows his master beyond this, he becomes a slave without

the slightest probability that his labours will be either useful or productive. The seeds must be sown in his own mind, which like the earth must first produce the tree, before it can bear the fruit. On this point it is obvious that great care in the instructor is requisite lest the pupil should neglect to do that for himself, which alone can make him a philosopher. Now the 'arts and methods' of knowledge, as Bacon terms them, are the instructors of us all. There are certain general properties of science in which all philosophers of the age agree. And when these have become settled and reduced to exact methods, they are very likely to retain their features, whether they are the fair expression of the simple truth or not. It requires more than ordinary strength of mind to rise above their influence. It is in fact the very thing which Bacon did in his age, and for which we honour his memory. But we should honour his principles still more in endeavouring to remove all improper influences from this source. We are not to receive theories and inferences, because he who proposes them calls himself a Baconian philosopher. But we must endeavour to elevate our understandings so as to see them for ourselves, and thus become ourselves philosophers in the true sense of the term. We shall then enter into theories, and instead of repeating what we have heard others say, shall be able to speak what we have ourselves seen.

In connexion with this part of the subject the memory is too remarkable a power of the mind to be passed over in total silence. There is no power of the mind which has been less understood or more perverted from its true uses. We have not time to pursue an inquiry into the nature of these uses, but quote a paragraph to show at least in a negative form, what Bacon's views were in relation to it.

'For the other principal part of the custody of knowledge, which is memory, I find that faculty in my judgment weakly inquired of. An art there is extant of it; but it seemeth to me that there are better precepts than that art, and better practices of that art, than those received. It is certain the art, as it is, may be raised to points of ostentation prodigious: but in use, as it is now managed, it is barren, (not burdensome, nor dangerous to natural memory, as is imagined, but barren,) that is, not dexterous to be applied to the serious use of business and occasions. And therefore I make no more estimation of repeating a great number of names or words upon once hearing, or the pouring forth of a number of verses or rhimes extempore, or the

making of a satirical simile of everything, or the turning of everything to a jest, or the falsifying or contradicting of everything by cavil, or the like, (whereof in the faculties of the mind there is great "copia" (plenty,) and such as by device and practice may be exalted to an extreme degree of wonder,) than I do of the tricks of tumblers, funambuloes, baladines; the one being the same in the mind that the other is in the body, matters of strangeness without worthiness.'—pp. 231, 232.

We cannot conclude this article without asking pardon of the reader, (if indeed we have one who has followed us through,) for the irregular manner in which this notice has been conducted. We are well aware that it is far from being what it ought to have been. But, such as we have been able, under peculiar circumstances, to make it, it is given; in the hope that the extracts, which are certainly valuable, will induce a more general examination of the writings of the father of modern philosophy.

ART. II.—*Errors in Common Education. An Address delivered at the Lyceum in Brooklyn, Con. Oct. 22, 1828, by S. J. May.*

[Few means seem better adapted to produce extensive improvement in common education, than the discussion of the principles on which it is, or ought to be, conducted. Our books for the use of schools are, with a few exceptions, very defective. But our prevailing methods of instruction are still more objectionable, than the manuals on which they are founded. The preparing of proper books for elementary tuition, has been a process rather slow in its developements. The first step of progress was the cutting down of great volumes into small ones, by the short-hand method of abridging; the language being suffered to remain as it stood originally, when intended for adults. The next step, was the additional one of writing down the phraseology to the level of infant capacities. A third advance consisted, in giving the thoughts, as well as the language, a familiar air, and an interesting form. A fourth stage of improvement seems now to be entered on, which is that of not only changing the aspect

and the dress in which thought is presented to the young minds, but the re-arranging of the thoughts themselves, so that their order and succession form a gradual and natural exercise of the mental faculties, and a silent, progressive, and practical course of intellectual discipline,—indicating at the same time, the path to be pursued in all endeavours for the attainment of knowledge.

With the exceptions of Colburn's Arithmetic, and those on the same plan, very little aid, in common education, has been derived from works written on rational principles of instruction ; and the school books in common use, imperfect as they are in themselves, have been rendered still worse, as instruments of instruction, by the mechanical modes of teaching, to which they have been rendered subservient. These evils need to be freely and often stated, that they may be brought fully before the minds of those who have influence in education.

Of the following address, we had occasion to speak in our last number. Deeming the views disclosed in it important to teachers and parents, we have obtained the author's permission to insert it in our pages. It is now presented with some modifications which he has obligingly made with a view to the objects of this journal. On behalf of this article it is unnecessary for us to say any thing. Its subject is one of universal importance, and is treated with a clearness and distinctness of manner, which cannot fail to carry light and conviction to minds accustomed to reflection on practical subjects.]

EDUCATION, in its broadest sense, may be understood to mean the complete and harmonious developement of all the intellectual and moral powers of our nature—the subjection of ourselves to the supreme control of right principles, and the acquisition of all knowledge that may be necessary, in order to our filling well the sphere of duty, in which God hath placed us. Thus defined, it is the *great purpose* of this present state of our being. It is the work, which ought to be in continual progress, until, in the providence of God, we are deprived of our faculties. As we advance into life, multiply our relations to mankind, and assume new responsibilities, increased demands of one kind or another are, of course, made upon our minds and hearts. These render it necessary for us to seek higher acquisitions of knowledge, and to ponder anew, the correctness of our moral principles, in their operation upon new classes of duty. And thus the process of education goes on, or rather should go on, towards perfection.

It would be well for us often to take this extended view of education, because it is only when we contemplate the whole, that we can form just ideas of its subordinate parts. A principal source of the errors in common school teaching, to which I shall presently direct your attention, is, if I mistake not, a want of prospective reference to education in its enlarged sense. To whatever extent it may be probable this process will be carried in after life, the *commencement* of education ought in every instance to be the same ; that is to say, it ought in every instance to be such, as shall have a direct tendency to the grand result. So that any one, however humble be his origin, may be set out in that course, which, if his talents and opportunities in life permit him to pursue it, may lead him to the highest attainments in knowledge and virtue. In one word, the specific object of elementary instruction in every instance should be, *to begin that harmonious developement* of all the powers of our nature, which, if we do not paralyze them by our sins, will be expanding forever.

These introductory thoughts are, I am too well persuaded, very unlike the notions generally entertained on the subject before us. Most persons seem to consider a common education to be nothing else than the acquisition of a certain verbal familiarity with language, grammar, geography and arithmetic. Whether all these branches of science should be introduced into our common schools, in preference to others which are wholly neglected, admits a question of serious import. But I shall not now stop to consider it. I am not disposed to find so much fault with the branches, which, it is pretended, are taught to children, as with the manner in which instruction is generally given—a manner unfriendly, I am confident, yes, utterly incompatible with the attainment of a thorough, practical knowledge of either of these sciences, and tending scarcely at all to that unfolding of mind and heart, in which, as has been already said, real education consists. The study of some sciences is undoubtedly a better discipline of the mind, than the study of others ; but any subject of knowledge may become, in the hands of a skilful master, instrumental to the expansion of most of the mental faculties. I have seen one, who understands the art of teaching, make even a twig of a rose-bush the source of much valuable truth, which, in a most natural process, he led his infant pupils to gather for themselves, by the exertion of their own intellectual powers. The close attention they voluntarily gave him—the eagerness

with which their minds seemed to follow out the little trains of reflection or reasoning that he started, showed most plainly, that no enjoyment is higher, even to a very young mind, than the real pursuit of truth.

✓ That this is the fact, we may also infer from the almost insatiable curiosity children evince, when a new object is presented to their notice—the succession of questions they will ask, in order to elicit from you what they wish to know. An attempt on their part which is, alas, often fruitless, because parents or teachers are too indolent, or too busy, or too ignorant to impart the information they solicit. After being thus disappointed again and again—and perhaps reproved for impertinence, many children learn to suppress their curiosity, refrain from inquiry, and are persuaded or compelled in silence, to commit to their memories words, to which they affix no correct ideas, concerning things, about which they are wholly ignorant. Now, my friends, it should never be forgotten, that the curiosity of a child—the inquiries he makes—are the index of his mind ; they direct us to the very point, where our assistance is needed. In teaching a child therefore, we ought first to *awaken curiosity*, excite thought about the subject with which we wish him to become acquainted ; and should encourage his questions so long as they are evidently suggested by the desire of *knowing* something more. Whenever his question relates to a fact which he does not possess, that fact must of course be communicated to him, and impressed upon his memory ; but if his question may be answered by inferences from facts which he is known to possess, then we ought to lead him by a simple course of reasoning or reflection, to draw those inferences for himself. Thus while he is acquiring knowledge, he will be learning what is better, *how to use* his intellectual powers ; and these will be strengthened by every effort he is induced to make with them.

This plan, or something like it, I have seen pursued with complete success in the instruction of very young children. Indeed, it is the basis of the method pursued in Infant Schools, as they are called, which embrace children between the ages of two and six years. These schools are of recent origin, but have awakened great interest both in this country and England ; and have already repaid, a hundred fold, the expense of their support, by the disclosure of facts important to the science of teaching, and by the happiness they have diffused, wherever they have been established.

Who, that ever feels compassion, can look into our *common* schools for small children, and not have his compassion strongly excited, especially if he retain any recollection of his own feelings, when he was subjected to the same dull trial of his patience. There the little creatures are ranged on uncomfortable benches, condemned to sit still, if possible, perhaps with their hands folded, the greater part of three long hours in each half day, *literally doing nothing*, at the very time of life, when activity of mind and body are most congenial to them. No attempt is made to excite thought, to communicate ideas, to awaken curiosity, to impart knowledge. It is even doubted if they are capable of receiving much instruction; and the avowed reason for sending them to school, is to keep them out of mischief or harm's way, or to alleviate their mothers' care. For months, and perhaps for a whole year, they are kept drilling upon the alphabet, an assemblage of strange figures, as unintelligible to them as the hieroglyphics of Egypt; and afterwards, for another year, must pore over columns of syllables and words, of which not one in twenty can they understand.

Through all this darkness, without one gleam of intellectual light to cheer them, children are persuaded to persevere by dint of praise, and emulation, and cakes and kisses—or, by the sterner sort of pedagogues are compelled to toil, through fear of the rod, the fool's cap, or longer confinement in the hated school-house.

Oh! who, that is a parent, does not wish that some more inviting path to knowledge may be opened for his children? Who, that knows anything of the human mind, does not grieve, that it is commonly subjected to such evil influences, at the very time when it is most susceptible?

If now we turn our attention to the other branches, which it is pretended are taught in our common schools, we shall find that the same erroneous method is pursued with them also. The memory is the faculty chiefly called into exercise. This is required to crowd itself with technical terms and definitions, that are as unintelligible as the things they purport to explain; so that a crude mass is collected, which few minds are afterwards able to digest, or reduce to any useful purpose.

For example, in teaching grammar—the first step is, for the pupil to commit to memory the parts of speech, with their definitions; then, the variations to which those parts of speech are subjected by number, gender, case, mood, and tense; and then, the relation that words may sustain to each other, when

arranged into sentences. Now, all these things will be riddles to the learner, until after he has become familiar with the usages of correct language, by much reading of well-written books. The time, therefore, which is usually spent by children in committing to memory some treatise on grammar, is little better than wasted. If the same time were expended in reading with care, specimens of correct and elegant English—in ascertaining precisely the meaning of sentences—particularly observing those that may be at all peculiar in their structure; if the time, I repeat, usually spent in learning to recite the pages of Murray, were faithfully employed in the manner suggested, I am confident the pupil would acquire incomparably more knowledge of the language, and would much sooner learn to use it with greater accuracy than most of our common school taught grammarians do; besides which, he would be more likely to obtain the *very rare* accomplishment of reading well. In proof of what has been said, I might point you to certain persons, who write with a good degree of propriety and even elegance, though they never learnt anything about the technics of grammar; while, on the other hand, you all undoubtedly know many persons, claiming to be very familiar with orthography, etymology, syntax, and prosody, yet habitually, both in speaking and writing, outrage some of the first principles of language.

It may be very proper, indeed it is indispensable to a finished education, that one should learn the science of grammar; but I am persuaded the common method of teaching it is most unnatural, and therefore so often unsuccessful.

Mistakes of the same kind are made in teaching geography. Here, too, the common way is to begin with the technics—the general principles—the great outlines of the science. The learner is first introduced to a very summary account of the solar system, of which the earth is a member. He is required to commit some sentences about the theory of Copernicus, which he is *taught to say*, is the true system; about planets and their secondaries, fixed stars, and comets; about the dimensions of some of the heavenly bodies, their distances from the sun, their annual and diurnal revolutions; and perhaps a few words respecting Newton's hypotheses, to account for their suspension in the heavens, and the regularity of their motions, that is, the attraction of gravitation, and centrifugal and centripetal forces—all which, must be very intelligible to a young beginner, quite as much so, as the extraction of the

cube root would be to one, who had never learnt the four simple rules of arithmetic. Here, I will take the liberty to introduce an anecdote, much to my purpose. A little boy, who had made some progress in the study of geography, repeated to a friend of mine, with great verbal accuracy, all he knew about the heavenly bodies. My friend, knowing that sound does not always denote sense, asked him what the heavenly bodies are, a question not in the book. The little fellow was somewhat puzzled, 'when good folks die sir, they go to heaven, and then they are called heavenly bodies.' This answer certainly evinced power of thought and reasoning ; though it was evident his instructor had taken no pains to improve these faculties of his mind. The mistake of the boy is easily accounted for, if he had ever read or heard anything about the heathen gods and goddesses, Jupiter, Mercury, Venus, Mars and Saturn.

When the learner has become able to repeat, to the satisfaction of his teacher, all that the author of the book he studies, has thought proper to impart, respecting the solar system, he is next introduced to the earth ; to a detail of its natural, artificial, and civil divisions. He must commit to memory several pages about its great and less circles, the equator, ecliptic, meridians, parallels, zones, tropics, colures ; and all this, be it remembered, without a globe to aid his perception of the meaning of these terms. Then he must learn the definitions of a continent, island, isthmus, promontory, &c., of an ocean, sea, lake, gulf, river, &c &c. To these he must add the civil divisions of the earth, its empires kingdoms, duchies, provinces, states, counties, towns. Now all these things, it is doubtless necessary he should know ; but I contend it is not right to make him learn these things first. They would come in, at a later period, more naturally, and would then be more intelligible. But to proceed ; when the pupil has stored his memory with the above-named technics, (and many more that might have been mentioned,) without understanding half of them, he is next presented with descriptions of various parts of the earth. In the course of this survey, he may perhaps be brought for the first time into the vicinity of his home, his country, state, perhaps county. Here, however, he is not permitted to tarry long, not long enough to learn what every one ought to know, respecting the region in which he lives. He is hurried away to other parts of the earth, and is required to learn one detail after another, of the situa-

tion, extent, boundaries, civil divisions, climate, population, soil, and productions of this country and that, until in this summary way, the author has carried him, as he fancies, around the circle of the science. And when he has completed it, it is too probable the pupil is possessed of very little more practical knowledge of the matter, than when he began. Often have I met with those, who could tell me much about the situation and peculiarities of the Nile or the Ganges, but were utterly ignorant of the rise, course, and general characteristics of our own Quinnebaug; and with others, who knew very well the number of inhabitants in France, but were at a loss when I asked for the number in Windham county. Many a child, I fear, taught in our common schools, who may delight his parents, and gratify his own and his instructor's vanity, by his rapid answers to the common routine of questions in geography, would be found sadly deficient on a more thorough examination.

✓ Some improvements, I grant, in the mode of teaching this science, have already been introduced into our schools. Maps are used much more than formerly, but not yet so much as they ought to be. As to *globes*, I have never seen, or heard of, but one, in all the schools in this region. Now it is not to be doubted, that in the natural sciences, a model, a picture, or any illustration addressed to the eye, will do much more towards impressing a truth upon the mind, than the most elaborate verbal description. Maps and globes are therefore indispensable in teaching geography,—the learner should have them before him continually. But geography is still taught too much without them—*by rote*—and in the otherwise unnatural manner I have attempted to describe. Instead of which, the learner ought to begin with his own town, county, state, country, and thence proceed to more distant parts of the world, aided all along by good maps, and an occasional recurrence to a globe. Afterwards, he may be taught that the earth is a planet, belonging to the system, of which the sun is the centre; and so on may be led, as far as you please, in the delightful study of this glorious universe.

The common method of teaching arithmetic is not any better, than we have seen it to be in geography and grammar. General rules, abstract principles, tedious definitions are first presented to the learner; and when he has committed them faithfully to memory, they are useless, until his instructor actually takes the slate and pencil, and *shows* him by an example,

how he must operate with the figures before him. I question, if there ever was a boy, who learnt to perform the simple rules of arithmetic, from the directions given in his book, unaided by some visible illustration of the process. Yet there is nothing difficult in these first principles of the science. The relations of numbers, which they disclose, are not arbitrary, nor artificial. They are not established by prescription. They exist in the very nature of things ; and every child may be led to discover them, by the powers of his own mind, if the right method be pursued, that is, if only such numbers as he can comprehend, be first presented to him. When he has thus found out that such relations do subsist between small numbers, he will readily conceive that they subsist also between larger ones ; and may be led on step by step, to manage, without perplexity, the largest combinations of figures, making use, as he may need, of the various helps and expedients, which mathematicians have devised for operating with numbers, that cannot be embraced by the mind at once.

For want of some such lucid method of teaching arithmetic, how often do we find those, who have been ‘ clear through Daboll’s,’ or some other common book of the kind, and yet know nothing about the *principles* of the science, and are therefore unable to apply them in cases, which do not happen to be obviously similar to the examples given in the book. Other elementary treatises on this science are used in some places, which I wish might be speedily introduced among us—Colburn’s and Smith’s. The latter is constructed in part, the former wholly, on the natural and rational method, at which I have just now hinted.

I should offer you much more on this, and the other branches of common school education, were it not that by so doing I might encroach upon the provinces, which those, who follow me, intend to occupy. Four gentlemen have engaged to address the public, in succession, upon the several sciences taught in our schools. I trust it will be the aim of each one to exhibit to you, more fully than I have done, the errors committed in teaching the branch, on which he treats ; and that he will set before you in detail some better method, illustrated by pertinent examples.

The substance of what I have said is as follows. Teachers in our common schools generally, and almost all the elementary books used by them, adopt a method inverse to that which nature points out. Learners are required to begin with *gener-*

als, and thence descend to *particulars*, whereas the opposite course should be pursued. The nature of the human mind suggests the propriety of taking the opposite course ; indeed it is thus the mind, if left to itself, would be obliged to seek knowledge on any subject. It must first consider particular things, which come under its observation ; thence, extend its notice to other particulars more or less resembling the first—and by comparing one individual with another, is led to form *classes* of truths. By examining and comparing these again, it is enabled to form larger divisions ; and hence proceeds to *general* and *abstract* ideas. It seems to me therefore very obvious that, in teaching the young any thing, we ought to begin with the consideration of what they already know, or may easily ascertain : and so on step by step, from that which is most easy to those things, which are more difficult to be understood, continually requiring them to exert their own powers to discover what we wish them to know ; and this we may enable them to do, if we approach the truth in a simple natural manner ; being careful that they understand, as they advance, every preliminary.

Few seem to be aware, that instruction is an art, which requires on the part of the teacher an acquaintance with the human mind, and a careful observation of its workings, under the process to which it must be subjected in order to learn any science. Most persons think it enough to put the elementary book into the hand of the pupil, and exact from him a *memoriter* recitation of successive portions, until the whole be gone over. But in most cases, this will be *only* an exercise of the memory, and may be well accomplished, while the pupil remains wholly ignorant of the subject, on which the book treats. The mind may be filled with words, and at the same time very empty of ideas.

This leads me to another remark, which indeed has been anticipated, in much that I have said. It is, that the memory alone is in any great measure developed by the common mode of education. The other intellectual powers are suffered to lie dormant, although occasions for their exercise must be occurring continually. As fast as the memory can receive them, facts and inferences are crowded indiscriminately into it. Whether pupils can or cannot understand, at the time, what they are learning to repeat, is considered of little consequence ; for it is sapiently said, when they come to years of discretion, they can examine the stock of materials they are now gathering,

and reduce them to order and use. But, as we have seen, the other powers of the mind never having had any proper cultivation—*habits* of reflection, comparison, discrimination, and judgment never having been *acquired*—these faculties, in very many, seem to remain inactive through life ; and the facts and opinions, which in childhood and youth were stored in the memory, lie there forever a confused and useless mass.

As I profess to be speaking of the prominent errors in the common mode of teaching, practised in our schools, it will not do to pass by the important art of reading, with only the slight allusion I have made to it. The great leading error, which we have exposed in the manner of teaching every other branch, becomes peculiarly apparent in this. It is impossible for one to *read well* what he does *not understand*. Now as most of our instructors seem not to consider it an indispensable part of the office they engage to execute, to be careful that their pupils understand whatever they are directed to learn ; so they allow them to read, day after day, and month after month, passages from which they probably receive no very definite ideas ; until at last their pupils come to suppose, that the whole art of reading consists in calling words correctly and rapidly, in the succession in which they may happen to stand. This is, in fact, all that the greater part do acquire. To utter in *appropriate and agreeable sounds*, the thoughts which are set down on the printed or written page, is an accomplishment which few possess. This must be attributed, in the first place, to the fact, that learners are generally allowed to pronounce the words without attending to their meaning ; and secondly to the fact, equally well known, that very little if any pains are taken to cultivate the powers of the voice. In this last named respect there are too many instances of shameless negligence. We all know persons going through life, some of them public speakers, with great defects of utterance, which might and ought to have been remedied when they were children. If more care be taken now in this respect than formerly, it is unknown to me.

While on the topic of reading, I cannot but point your attention particularly to an evil, which I have often noticed with the deepest regret, because it is injurious to our children in a more important respect than any other. I mean the manner in which the New Testament is permitted to be read in our schools. There are perpetually recurring, in this sacred volume, words, phrases, and allusions which, all know, need much

explanation. Yet children are required to read it through and through, without any attempt being made to render it intelligible to them. The evil of which I complain would be less, if the *easier* parts were selected for their perusal. But, if I mistake not, they are led through the whole ; the most obscure passages in St. Paul's Epistles, which the apostle Peter himself found it hard to understand, and even through the Apocalypse, which the most learned theologians are still at a loss to explain. Nor is this all. In most schools, which I have visited, the pupils have been directed to read a certain number of *verses* a-piece, say two or three, as if each verse were a complete sentence. Yet this is most obviously not the case. The divisions into chapters and verses were made many hundred years after the books were written, merely for the sake of an easier reference to any passage. But they were unfortunately made with little care ; for very often parts of a sentence are thrown into different verses, and sometimes even into different chapters. In consequence, it is most hazardous to the sense of these writings, to be guided in reading them at all by these divisions. Yet you may every day hear them read in our schools, in portions of two or three verses, without any regard to the sense, and in utter defiance of commas and semicolons. Thus, the most momentous truths, and sublime doctrines, that have ever been communicated to the human mind, are gabbled over merely as an exercise in what is called reading. Hence, the pupils contract a habit of perusing the sacred volume without attending to the sense, a habit which they can perhaps never afterwards wholly correct. Or, what is still worse, they come to regard it as an unintelligible, or uninteresting book ; and in after life, rather turn from than seek its pages.

I might continue much longer on this strain of complaint ; but I fear you will be weary of me. If what has been said be true, the reason is obvious, why so many children regard learning as an irksome task, and the school-house a place of dull confinement. The mind and heart are suffered to slumber there ; the mental powers, except the memory, gain no strength, no activity ; and our children are growing up strangers to the delights of elevated thought, clear reasoning, and accurate information. A disrelish for intellectual pursuits is acquired at the very place, where the love of them ought to be cherished ; and even the desire of knowledge seems, in many instances, to be utterly extinguished.

I wish there were time for me to speak, in this connexion of

the errors observable in the *moral discipline* of our children. These also are numerous and great, but I must defer the consideration of them to some other occasion.

The reform, so much needed in our common schools, cannot be effected in a day. It must take time to eradicate abuses which time has nurtured. But every man who loves his country or his kind, will heartily cooperate in the measures that will tend to a result so devoutly to be wished. It is cause for grateful joy, that so many minds and hearts are now engaged in the inquiry, 'how the standard of common education may be raised.' The public mind needs to be enlightened, the public feeling to be awakened. Every parent should know that he cannot confer so great a blessing upon his children as *a good education*. Every member of the community should know, that the hopes of our country are vested in the characters of our youth. All must be brought to feel, that the education of the rising generation is the most important of all our common interests. Then will it receive the attention and the patronage which it deserves.

ART. III.—*The Orthography of the English Language Simplified.*

[At the request of the author we have permitted the insertion of the following article, on an improved orthography, entire. A simpler orthography of our language is highly desirable. Its practicability is very doubtful.]

The Orthography of the English Language Simplified, and adapted to the general standard of Pronunciation. Intended greatly to facilitate the attainment of a common education, and every thing which is accomplished by a Written Language; or to do for Literature what the steam engine has done for navigation. By U. C. BURNAP, A. M.

Preface.

Letters are the first principles of a written language. With these are made syllables and words, by the different sounds of which, different ideas are expressed. When a word is written, we recognise its signification, by knowing what sound is at-

tached to it when it is spoken. The labour of learning to read consists in rendering familiar the sounds which are attached to a certain combination of letters and syllables.

The amount of labour required to read any language, by one who can already speak it, depends upon the simplicity and the perfection of the alphabet. *To be perfect, the letters of an alphabet must express every simple sound in the language; and no two letters must ever express the same sound.* When a language is so constructed that its sounds are very numerous, it may be easier to give one character two or three different sounds, distinguished by some simple mark, than to multiply characters; but no adequate reason can be given for ever having two characters used to express the same sound.

The English alphabet is deplorably imperfect. Several sounds, very common in the language, are not expressed by any character; and several characters are often used to express the same sound.

Nothing in the alphabet, as the letters are pronounced, would indicate the sound of *th*, *sh*, *tch*, *h*, as an aspirate, *g*, as in *go*, *w*, as in *wind*, or *y*, as in *you*. By learning all the consonants the child is not prepared to form any of these sounds. On the other hand, several letters are used to express the same sound; as *g* and *j*, *c* and *s*, *s* and *z*, *f* and *v*, *ph* and *f*, *c*, *q*, and *k*, *w* and *ua*. In the vowels there is much ambiguity. Several have the same sound in different places. As, *sir*, *her*, *bur*, the *i*, *e*, and *u*, having the same sound in these words.

These deficiencies and redundancies, together with double and silent letters, render the orthography of the English language perplexing beyond description. No general rules can be formed for spelling. The art of spelling can be acquired only from the memory of every word. When a child has learned to spell one half of the words, he has obtained no rules to assist him in the other half. In no case is the pronunciation of a word a sure guide to the spelling; nor is the spelling, when seen, any sure guide to the pronunciation.

Years of labour, perplexity, and discouragement are spent in learning to spell, nor is the art ever obtained to perfection. With regard to literature, we must take a heavy burden on our backs in childhood, and carry it through life, without deriving any benefit from it, during any of our course. We may throw it off now, and never impose it upon our children and our posterity.

The following system is introduced to remedy the evils

which have been mentioned—to supply the *deficiencies* and remove the *redundancies* of our alphabet, so that the letters may be perfectly adapted to the orthography, and the orthography perfectly suited to the pronunciation. By altering the names of some of the letters, adding one, by inversion, and omitting one, and by using some simple distinctive marks, I have rendered the alphabet perfect, without any new characters; so that when the child has learned his letters, he has learned to spell every word in the language, and no one can be at a loss how to spell a word which he can pronounce.

The *simplicity* of the system is what induces me to present it to the public, and to hope that it will eventually prevail, and be a blessing to our country.

The Alphabet.

Pronounced		Pronounced	
A	a	L	el
B	be	M	em
C	she or che	N	en
D	de	O	o
E	e	P	pe
F	ef	R	ar
G	ge as in go	S	es
H	he	T	te
Λ	the, as in thin, or this. It is <i>v</i> inverted in all cases.	U	u
I	i	V	ve
J	ja	W	we
K	ka	X	ex, eks, or egs
		Y	ye
		Z	ze, or zhe

Power of the Letters.

The letters of the alphabet are divided into vowels and consonants.

The *vowels* are five, a, e, i, o, u. W and y are not to be used as vowels, or at the end of words, because we have vowels enough without them; and they occasion a perplexing ambiguity.

A has three sounds.

1. a natural, as in *save*.
2. a short, as in *hat*.
3. a sharp, as in *part*.

The sound of broad a, as in *hall*, is supplied by short o,

which is to be used in all places where *a* has had this sound. The object of this change is, that no two vowels shall ever have the same sound. Other changes will be made in the vowels for the same purpose. I wish to remove all redundancy from the vowels, so that there may be no doubt which one to use for any specified sound.

E has two sounds.

1. *e* natural, as in *mete*.
2. *e* short, as in *met*.

I has two sounds.

1. *i* natural, as in *pine*.
2. *i* short, as in *pin*.

O has two sounds.

1. *o* natural, as in *note*.
2. *o* short, as in *not*.

The sound of *oo*, or of *o* in *move* is to be expressed by the third sound of *u*, in order that there may be but one sound of the kind among the vowels.

U has three sounds.

1. *u* natural, as in *tube*.
2. *u* short, as in *tub*.
3. *u* sharp, as in *bush* ; or the sound of *oo*.

With regard to this letter, it should be observed, that in its common pronunciation, it is not strictly a vowel, being sounded as if it were spelt *yu*. When it begins a word with its *natural* sound, it retains this consonant sound ; in all other cases it has only a vowel sound. In such words as *unit*, *universal*, it is sounded as if it were preceded by *y*.

It is common to make more minute divisions of the vowels, than is here retained ; but careful examination will show that here are all the distinct vowel sounds in the language. Sounds may vary in quantity, or the same sound may be protracted more in some words than it is in others, without any real distinction in the nature of the sound. The short *o* is protracted more in the word *nor*, than in the word *not* ; but there is no distinction in the simple sound. The sharp *u* is sounded longer in some words than in others, while the organs retain the same position. It would be unnecessary to designate these distinctions, because they are governed by the consonants, with which the vowels are connected. For instance, the scholar will necessarily dwell longer on the sound of *o* in *nor*, than in *not*. The same word is varied a little in pronunciation, by the importance which is attached to it, so that it would

be impossible to mark all the varieties of pronunciation, in relation to the *quantity* of sound ; and the attempt would cause perplexity, rather than promote harmony.

Thus, there are, in our language, twelve distinct vowel sounds, requiring so many characters to distinguish them. To prevent the necessity of new characters, I use the following methods of distinction.

Let the simple letter *a* be *a* natural in all places ; *a* with one dot over it the second, or short *a*, and *a* with two dots the third, or sharp *a*.

Let simple *e* be *e* natural ; *e* with one dot, be short *e*.

Let *i* with one dot, as usual, be *i* natural ; *i* with two dots, *i* short.

Let simple *o* be *o* natural ; *o* with one dot, short *o*.

Let simple *u* be *u* natural ; *u* with one dot over it, short *u*, and *u* with two dots, sharp *u*.

In this way, the vowels would be perfectly distinct, so that there would be no hesitation about their sound. As the vowels are now used, great perplexity arises from sounding one like another, in many cases. I propose to avoid all this, by always using the vowel, the sound of which I want. One vowel is never to be sounded like another. We have *twelve* distinct vowel sounds in our language, and by applying them according to their definitions all perplexity may be avoided.

The *diphthongs* *oi* and *ou* are strictly vowel sounds, being the short sounds of those letters respectively ; so that no new character, or mark of distinction is requisite for them. They are to be used in all cases, where *ow*, and *oy* have expressed their sound.

By these definitions and explanations we have a *perfect vowel system*.

Consonants.

B has one sound as in *bo*, *rob*.

C has two sounds,—1. of *sh*, 2. of *ch*, as in *show*, *charm*. In spelling words where it sounds like *sh*, it may be called *she*. In its other use, it may be called *che*. Its second sound is distinguished by one dot over it. I have altered this letter, because it is not needed for its present use. **S** and **k** may supply its place where it has sounded like those letters ; and because we had no such sounds in our alphabet as are now given to it. By the alteration, two deficiencies are supplied, and two redundancies are removed.

D has one sound, as in *did*.

F has one sound, as in *fo*. It is never sounded like v, nor is its sound ever supplied by *ph*.

G has one sound, as in *go*, *log*. It is never sounded like j. I have altered the name of this letter, because we had not its sound in the alphabet. The alteration is a remedy for a redundancy and a deficiency.

H has one sound, as in *ho*, *hand*. The name of this letter is altered to have it express the proper sound of the letter, and to have its pronunciation easy.

A has two sounds. 1. *th* in *thin*. 2. *th* in *this*. The second sound is distinguished by one dot over it. This letter is added because nothing like its sound was in the alphabet. To prevent the necessity of new type, I have inverted the letter *v*. It is to be *written* like capital A without the cross, and the small letter in the same fashion. To make writing more legible, the small letter is to be made a little higher than the common small letters.

J has one sound, as in *just*. It is to be used in all places, where *g* has sounded like *j*.

K has one sound, as in *kite*. It is to be used in all places where *c* and *ch* have sounded like *k*; and also where *q* has been used.

L has one sound, as in *lo*.

M has one sound, as in *man*.

N has one sound, as in *no*.

P has one sound, as in *pin*.

The place of *q* is supplied in all cases by *k*, and *q* is cast out as redundant.

R has one sound, as in *ro*, *or*.

S has one sound, as in *so*, and is never to be sounded like *z*.

T has one sound, as in *tin*, *at*.

V has one sound, as in *vine*, *ov*.

W has one sound, as in *wind*, *wo*.

I have altered the name of this letter, to have it spoken more easily, and to have it express the sound for which it is used. It is not to be used as a vowel in any case.

X has two sounds. 1. of *ks*. 2. of *gz*. The second sound is denoted by a dot over it. This letter is a redundancy in the alphabet, and might be omitted. I retain it, because in all cases where it is used, it supplies the place of two letters, and being uniformly used for those letters it cannot cause any perplexity.

Y has one sound, as in *you*, *yonder*.

I have altered the name of this letter, to have it express the sound for which it is used.

Z has two sounds. 1. as in *zeal*. 2. as in *azure*, or as *zh*. The second sound is denoted by one dot over it. Z is to be used in all places where *s* has sounded like *z*.

Thus we have twenty-three consonant sounds, and twenty-one consonants. X is redundant, so that we must express twenty-three sounds by twenty consonants. C, A, and z, have two sounds each, so distinguished as to cause no more ambiguity than if we had new characters. In this way an alphabet is rendered perfect, with regard to consonants; and we see that our language has but thirty-five simple sounds, by the combination of which all our words are formed. We have twenty-three consonants, and twelve vowels. At the first view, the sounds of *ng*, *nk*, and *nx* may appear to be different from any thing in the alphabet; but on closer examination, they are found to be compound sounds, the result of the quick pronunciation of the two letters. Each of these sounds varies in different places, so that a character could not be perfectly adapted to it; and by continuing the two letters we get the sound with less perplexity than we could by any new characters.

General Rules for Spelling according to the new Orthography.

1. No silent letters are to be used; every letter has its full, natural sound.*

2. No double letters are to be used; as *ff*, *ss*, *ll*; and no repetition of letters, as *immortal*, *borrow*. One of these letters produces the same sound in pronunciation as both.

3. In words where the termination *ed* is not sounded as a distinct syllable, the *d* only is to be written.

The most general rule on this subject is, when a word ending in *ed* is used as an adjective, the sound of *ed* is to be full. In all other cases it must be shortened, when the pronunciation will admit. Such words as *wasted*, *feasted*, will not admit of contraction.

4. The *e* final is to be omitted, except in words of one syllable, containing but one consonant; as *me*, *ye*, *se*.

5. In no case should two letters be employed when one will express the sound.

The imperfect syllables, such as the last of the following words, should not have a vowel.

* N, before *g*, *k*, and *x*, has not a full sound, but is slightly pronounced.

Heaven, given, person, able, eagle.

They should be written thus ;

Heavn, givn, persn, abl, eagl.

The sum of all these rules is,—Let every word be spelt in the easiest manner possible, keeping in view the true pronunciation of every syllable, and the sounds of all the letters. To change any word to the new orthography, nothing more is necessary than to ascertain its true pronunciation, and then make the sounds in the most simple manner.

To the Instructor.

What has already been said, is intended merely as an explanation of the system, to prepare one to read, write, and teach the new orthography. I shall now commence again, with the elements of the language, according to the new orthography, as an introduction to a spelling book designed for common instruction.

Ae independent Amerikän Spelling Bük; ör ae Oraögrafe öv ae Englic Längwaj Simplefd and adapted tü ae jénural standürd öv pronünsiäcün. Intended gratele tü fasilitat ae atanment öv a kömun ejukacün and evre aing whic iz akompliced bi a ritn längwaj; or, tü dü för Lïteratur whot ae stem enjin hâz dün för Nâvigacün. Bi U. C. Burnâp, M. A.

Alphabet.

A	a	a	M	m	em
B	b	bee	N	n	en
C	c	ce	O	o	o
D	d	de	P	p	pe
E	e	e	R	r	ar
F	f	ef	S	s	es
G	g	ge	T	t	te
H	h	he	U	u	u
Λ	Λ	Λe	V	v	ve
I	i	i	W	w	we
J	j	ja	X	x	ex
K	k	ka	Y	y	ye
L	l	el	Z	z	ze

Lëtürs är divided intü vouëlz and kônsonänts. A vouël kân be sôunded without Λe hêlp öv ânüær lëtür. A kônsonänt rekwirz Λe hêlp öv a vouël in pronünsiäcün. Whên Λe cört soundz öv ou and oi kûm tûgêthür, Λa är köld dipäönx.

Aar är fiv vouëlz, a, e, i, o, u.

A hâz are soundz.

1. nâcurâl, âz in *slat*.

2. còrt, âz in *hât*. Non bi wùn dot.

3. cârp, âz in *pärt*. Non bi tü dots.

E hâz tü soundz.

1. nâcurâl, âz in *me*.

2. còrt, âz in *lêt*. Non bi wùn dot.

I hâz tü soundz.

1. nâcurâl, âz in *bi*.

2. còrt, âz in *pîn*. Non bi tü dots.

O hâz tü soundz.

1. nâcurâl, âz in *bo*.

2. còrt, âz in *nòt nòr*. Non by wùn dot.

U hâz are soundz.

1. nâcurâl, âz in *bu*.

2. còrt, âz in *büt*. Non bi wùn dot.

3. cârp, âz in *rüt, müv*. Non bi tü dots.

In förmîng würdz, aar müst be âz mène silablz âz aar är vouëlz, except when æ vouëlz är uzd âz dipaönx.

Æ Konsonants.

Æ konsonants hâv büt wùn sound ec, except æ for föloïng, c, ð, x, and z.

C hâz tü soundz. 1. âz in *cin* (shine). 2. âz in *çurn* (churn). Æ sèkünd sound iz dîstîngwîcd by wùn dot ovür æ ç.

Æ hâz tü soundz. 1. âz in *aïn*. 2. âz in *æ*. Æ sèkünd sound iz non bi wùn dot, ð.

X hâz tü soundz. 1. âz *ks*. 2. âz *gs*. Æ sèkünd sound iz non bi wùn dot, x.

Z hâz tü soundz. 1. âz in *zel*. 2. âz in *âzur*. Æ sèkünd sound iz non bi wùn dot, z.

Ol æ konsonants hâv aar fül sound, wharevür aa ökür, except n, whïc, befor g, k, and x, iz slitle sounded.

Æ föloïng lètürz ma be uzd för würdz, för æ sak öv expedicün in riting, wiâout okazünîng ene pèrplèxîte. A, i, and o, är nèsesarîle uzd för würdz, beköz aa kân nòt be spèlt, except by æmsèlvz. B ma be uzd för be, c för ce, h för he, ð för æ, r för ar, u för yu, w för we, y för ye. Az, I am, æou ärt, h iz ; w r, y ör u r, aa r. I ma b, æou maést b, h or c ma b.

Æ lètür x iz a kontrâkcün öv ks, and gs, and cüd b uzd in ol kasèz instèd öv æoz lètürz.

To the Public.

That the foregoing system of orthography will be adopted in our country without opposition, is what no rational man could expect. Almost every valuable improvement must, at first, struggle with ridicule and opposition. In the way of so great a change, there are many and formidable obstacles ; but none of them are *insurmountable*. This is an age for improvement, and our country is favourably situated for accomplishing such an object as is here proposed.

Holding myself in readiness to answer any objections which may be presented, I shall not refer to any, at this time, but merely mention some of the advantages which would result from the adoption of this system.

In the first place, the prevalence of this system would render the spelling and the pronunciation of our language uniform and permanent.

A partial change in our orthography, or the alteration of only a few words, would not be desirable ; because it would open the way for frequent and perplexing alterations, and prevent anything like permanent uniformity. This system contemplates such a change, as will leave room for no farther changes. It renders our orthography perfectly simple—it spells every word in the most simple manner, according to the most approved standard of pronunciation.

2. The labour of educating our children is greatly diminished ; so that, with the same advantages, they may rise to a higher state of improvement. When the child has learned the alphabet, he has learned to spell every word in the language. He finds no ambiguity. He has but one method to form any syllable. When the language is printed with its proper marks, he sees at once how every word is pronounced. Thus, the labour of months may become the labour of so many weeks, in the elements of education.

3. The mental discipline would be far more valuable. To strengthen the intellectual powers they must be laboriously employed ; but they should not be applied to objects which can never be accomplished. Solving a difficult question in arithmetick, strengthens and invigorates the mind ; but labour upon one which cannot be solved, discourages, and unfits the mind for continued action. Our present method of spelling is a continual perplexity. The memory is assisted by no general rules. Every word must be learned by itself. Probably there is not a man in the United States, who can readily spell every word in our language. If his memory fails in a single instance, he can appeal to no rule for assistance. Putting such a task upon a child, discourages him, and rather unfits

Tü æ Publik.

Lat æ forgoïng sîstem òv òrαgrafe wîl be adopted in our kûntre wîhout òpozîcûn, îz whôt no racûnal mân kûd expêkt. Olmost evre vâluable împrûvment mûst, at fûrst, strûgl wîa rîdîkul and òpozîcûn. In æ wa òv so grate a çanj, ær ær mène and fôrmdabl òbstakls ; but nûn òv æm ær însûrmountable. Aîs îz an aj for împrûvment, and our kûntre îs favûrable sîtuated fôr akômplîcing sùc an òbêkt az îs her propozd.

Holding miself in redînes tû ânsêr êne òbjêkcûnz whîc ma be prezênted, I çâl nôt refer tû êne at aîs tim ; bût merle mênçûn sùm òv æc advântajez whîc wûd rezûlt frôm æc adoptcûn òv aîs sîstem.

In æ fûrst plas, æc prævalens òv aîs sîstem wûd rëndûr æc spêlîng and æc pronûnsîacûn òv our lāngwaj unîform and pèrmanènt.

A pārcal çanj in our òrαgrafe, òr æc òlteracûn òv onle a fu wûrdz, wûd nôt be desirabl ; bekôz ît wûd opn æc wa fôr frêkwent and pèrplèxing òlteracûnz, and prevent êne aîng lik pèrmanènt unîformîte. Aîs sîstem kôntèmplates sùc a çanj az wîl lev rûm fôr no fûræur çanjêz. It rëndûrz our òrαgrafe pèrfèktle sîmpl—ît spêlîz evre wûrd in æc most sîmpl mânûr, akôrding tû æc most âprûvd stāndārd òv pronûnsîacûn.

2. Aæ labûr òv ejukatîng our çîldrèn îz gratele dîmîncd ; so lat, wîa æc sam advântajêz, æc ma riz tû a hîer stat òv împrûvment. Whèn æc çîld hæz lèrnd æc âlfabèt, he hæz lèrnd tû spêl evre wûrd in æc lāngwaj. He findz nò âmbîguîte. He hæz bût wûn mēæod tû fôrme êne sîlabl. Whèn æc lāngwaj îz printêd wîa îts prôper māræ, he sez at wûns hou evre wûrd îz pronounsð. Aûs, æc labûr òv mûnæs ma bekûm æc labûr òv so mène wex, in æc èlèments òv ejukacûn.

3. Aæ mēntal dîsîplîn wûd be fār mor vâluabl. Tû strēngan æc întèlèkcûal pourz, æc mûst be laborîusle èmploid ; bût æc çûd nôt be âplîd tû òbjêkts whîc kân nèvûr be akômplîcd. Sôlvîng a dîfîkûlt kwēsçûn in ariamētîk strēnganz and învîgorats æc mind ; bût labûr ûpon wûn whîc kân nèvûr be sôlvð, dîskûrajêz and ûnfîts æc mind fôr kôntînud âkcûn. Our prèzènt mēæud òv spêlîng îz a kôntînuâl pèrplèxîte. Aæ mēmore îz âsîstêd bî no jēnûrâl rulz. Evre wûrd mûst be lèrnd bî îtsèlf. Prôbable, æc îz nôt a mân in æc Unîted Stats, hû kân redîle æc evre wûrd in our lāngwaj. If hîz mēmore falz in a sîngl înstāns, he kân âpel tû no rul fôr âsîstāns. Pûtîng sùc a tâsk ûpon a çîld, dîskûrajêz hîm, and rææur ûnfîts hîz

his mind for vigorous exertion, in other branches ; besides occupying years of time, which might be devoted to higher attainments.

4. The new orthography shortens the language about one sixth ; that is, five pages in the new will contain about as much as six pages in the old. Thus, books of the same real value may be obtained at a less price, and every thing which is accomplished by a written language may be done with less labour.

5. The ease with which this system can be acquired is encouraging, with regard to its general prevalence. A few hours' attention will enable one who has already learned to read, to understand the new orthography. And a little practice will enable him to write it readily.

6. It is not an object, the value of which is doubtful, when accomplished. Every person, of much reflection, must see that immense good must result from it, to all the future generations of our country. Like the revolution which made this a free and independent nation, it may occasion some inconvenience for a few years, but the blessings will extend to all posterity. The permanency of all our valuable civil and religious institutions depends upon the universal diffusion of knowledge ; and the new orthography may raise the standard of common education, and cause its blessings to become more widely diffused.

A vast proportion of the reading of our country is journals and periodical publications, the orthography of which can be altered whenever required ; and new editions of permanently valuable works may be issued in this form when they are wanted.

A spelling book, and other school books may soon be expected, adapted to the new system, that the rising generation may soon be relieved from the burden which we have long borne.

The editor of a journal who shall first send out his publication in this form, will be named with gratitude by posterity, as the courageous promoter of a most important revolution ; and the state which first adopts it, will long be honored for its patriotism.

With the hope that this system may be a rich blessing to our country, in relation to all its literary, political, and religious interests, I submit it to the examination and decision of the AMERICAN PEOPLE.

U. C. BURNAP.

mind för vigürus exürçün in ùäür bråncez ; besidz okupiing yerz ov tim, whië mit be devoted tü hier atanments.

4. Äe nu öraögrafe cörtanz äe längwaj about wun sixa ; äat iz, fiv pajez in äe nu wil kontan about az muc az six pajez in äe old. Äus, бүx ov äe sam réal valu ma be obtand at a les pris, and evre äing whië iz akömpliëd bi a ritn längwaj ma be dün wiä les labür.

5. Äe ez with whië äis sistem kan be akwird iz enkürajing, with regärd tü its jenüräl prävalens. A fu ourz atencün wil enabl wun hü haz ölrëde lérnd tü red, tü undérstand äe nu öraögrafe, and a litl prägtis wil enabl him tü rit it redile.

6. It iz nót an öbjëkt, äe valu ov whië iz doutful, when akömpliëd. Evre persn ov muc reflëkcün müst se äat imens güd müst rezult fröm it, tü ol äe fucur jenüracünz ov our küntre. Lik äe révölucün, whië mad äis a fre and independent nacün, it ma okazün sum inkönvenyens for a fu yerz, büt äe blësinx wil extënd tü ol pöstërite. Äe permanënce ov ol our valuabl sivil and relijus institucünz depëndz upön äe univër-sal difuzün ov nölej, and äe nu öraögrafe ma raz äe ständärd ov kömün ejukacion, and köz its blësinz tü beküm mor widle difuzd.

A väst proporcün ov äe readiing ov our küntre iz jürnalz and periödikal püblikacünz, äe öraögrafe ov whië kan be öltërd whenevür rekwird ; and nu edicünz ov permanëntle valuabl würx ma be icud in äis form, when äa är wönted.

A spëling бүk, and ùäür skül бүx ma sün be expëktëd, adaptëd tü äe nu sistem, äat äe riziing jenüracün ma sün be relevd fröm äe bürdn whië we hav löng born.

Äe editür ov a jürnal, hü cäl furst sënd out hiz püblikacün in äis form, wil be namd wiä grätitud bi pöstërite, az äe kürajüs promotür ov a most impörtant révölucün ; and äe stat whië furst adöpts it wil löng be honürd för its patriotism.

Wiä äe hop äat äis sistem ma be a ric blësing tü our küntre in relacün tü ol its litürare, politikäl, and relijus intërests, I submüt it tü äe exäminacün and desizün ov äe Amërikän pepl.

U. C. BURNAP.

ART. V.—*Elementary Instruction in Latin.*

[THE Latin language forms at present an extensive and very important branch of education. The proportion of time and attention assigned to it, and the methods adopted in teaching it, must always be matters of interest to parents and teachers.

In the successive numbers of this Journal we have accordingly endeavoured to attract the attention of our readers to the subject of modes of teaching in the department of languages. The course of investigation on this topic, has led us to state what we doubt is too little known, even among well-informed teachers, that the advantages supposed to result from established methods, have been questioned or denied by not a few of the most profound and learned men in various countries, who have made this subject a matter of close observation, and who have been induced to devise and offer methods more simple and rational. Among these eminent authorities on whatever pertains to the culture of the mind, Milton and Locke, Condillac and Dumarsais, have been repeatedly referred to in our pages ; and copious extracts from their writings have been introduced, embodying the substance of their views on this interesting question. In pursuance of the same subject, we would now offer to our readers a translation of Dumarsais' 'Exposition of a rational method for learning the Latin language,' and as introductory to that treatise, the following explanations of its character and objects, as given by D'Alembert in his eulogy of its author.]

'The method of Dumarsais divides his subject into two parts, —usage and reason. To know a language is to understand its words ; and this knowledge belongs properly to the memory, —to that faculty which is first to develop itself in childhood, which is even more lively at that age than at any other, and which may be called the intellect of infancy. It is this faculty, then, which we ought to exercise at first, and which ought even to be exercised alone. We could then teach children without fatiguing them, presenting, in various ways, those Latin words which are most in use. We should then offer them a Latin author to read, arranged according to the French construction, and without inversion. We should supply, moreover, in the text, the words 'understood' by the author, and place under every Latin word the corresponding term in

French. Opposite to a page so arranged, and with a view of facilitating the understanding of it, we should place the text to the author, as it is, and, by the side of the literal French, a translation accommodated to the genius of our own language. This manner of teaching Latin to children, is an exact imitation of the mode in which living languages are rendered familiar, which practice alone, teaches much sooner than all methods. It is, besides, in exact conformity with the order of nature. Language is first established, and grammar comes as a sequel.

As soon as the memory of children becomes supplied with words, as first their understanding enlarges, and the practice of translating brings them to perceive the varieties in the terminations of Latin words, and in construction, and the objects of these variations, they are taught, by degrees, declension, conjugation, and the first rules of syntax ; and the application of these is shown them in the very authors they are translating : thus they are gradually, and, as it were, by a sort of instinct, prepared to receive the principles of systematic grammar, which is properly nothing else than a true logic,—but a logic which may be put perfectly at the command of children. They are then taught the mechanism of instruction, by being required to trace the anatomy, as it were, of every phrase, and by receiving a correct idea of every constituent part of a sentence.'

[The introductory paragraphs in Dumarsais' Exposition being merely a statement, in his own words, of what we have just extracted from D'Alembert, we shall, for the present, omit,—with the exception of the following, which gives a very clear, though quaintly expressed, view of his whole system.]

'This method has two parts, *rote* and *reason*. I mean to say, that in the second part, is contained the *reason* for what in the first, was learned only by *rote*.

'PART I. ROTE. To understand the Latin language we must learn,

1. The signification of Latin words.
2. Latin inversion, or the transposition of such words as are not placed in the natural order which they follow in French.
3. Ellipses, that is to say, forms of expression in which there are words understood.
4. Lastly, Latinisms, or forms of speech peculiar to the Latin language.

Of the Signification of Words.

With regard to the signification of words, I know not why the early years of life are not employed in learning these ; for after all, to know a language is to understand its words. Children have memory ; and the study does not demand application : it is thus I think that we ought to begin.

I would begin with teaching children the Latin words which are the names of sensible objects with which their minds are most frequently brought in contact, *fire, bread, &c.*

Children take delight in learning these words, and in being asked to apply them. Hence results two great advantages : first, the knowledge of Latin words ; second, a stock of ideas and intelligence.

This stock of ideas ought to be one of the principal objects of education. It is with this view that I have composed a little treatise intelligible to children, to give them ideas of nature, of the arts and the sciences ; and I hope to render the reading of it more useful and more entertaining by the aid of illustrative figures.

I am well aware that this design has been executed in some measure by Pomey, in his *Indiculus Universalis*. His book, however, contains nothing but words, and these very often unsuitable. Before him, Commene, the author of *Janna Linguarum*, had a similar idea, but more enlarged. In his book, however, there are many faults both as regards words and things.

The words of my treatise I caused to be copied by children who are old enough to learn to write. Writing is a capital point, which ought never to be neglected. The great masters in education, have always advised the requiring of much writing. For this reason, I have my pupils copy daily from a vocabulary, in which the Latin verbs are arranged in four columns in alphabetical order, thus,

Amare, amo, amavi, amatum : *to love.*

By this exercise they learned the preterites and supines. The rules for forming these parts of the verb have always seemed to me very objectionable and quite useless. It is practice alone which teaches these. I appeal to all men of learning who have not become habituated to the business of teaching, whether most of them have not forgot entirely the rules of formation, and yet can recollect perfectly the prete-

rites and supines themselves. Use has graven them on the mind. I have observed, too, that it not unfrequently takes more time to learn some of the rules, than it does to commit to memory the whole class of words which the rules are meant to explain.

I hear my pupils read, morning and evening, what they have copied from the vocabulary I have mentioned ; and, in a short time, all the verbs are acquired with their significations. Here is a considerable advance ; for as no proposition can be made without a verb expressed or understood, so the pupils soon arrive at such a point of progress, that they find few or no Latin phrases in which they do not understand the verb,—that is to say, the principal word.

All these words ought to be impressed on the memory by a repetition skilfully managed. A few words should be learned every day, according to the capacity of the pupil ; and when in the repetition of them the teacher perceives that the pupil hesitates on a word required, care should be taken to anticipate the memory that it be not strained.* It is nothing but repeated use which can retrace the words on the mind, and prevent dislike, which is the greatest of all obstacles ; and which is ordinarily caused by overstrained application.

In teaching Latin, we should never omit to make our pupils take notice of all *radical* words as they occur. Etymology serves to render the mind familiar with the force of words, and aids in retaining them in the memory, by the connexion established between primitive and derivative words. This is a useful assistance to the acquisition of habits of accuracy in the choice of expression.

I make use for this purpose of the little dictionary of M. Danet, in which the words are arranged by roots. This work is but little known, though excellently adapted to impress words on the memory. For example, at *amo* I find

Amor—oris	Amica
Amator—oris	Amicè
Amatori	Amicitia
Amatrix	Amabilis
Amicus	Amabiliter, &c.

* We cannot pass over this humane and truly philosophic suggestion without submitting the inquiry whether in some instances education is not a process of habitual 'straining,' rather than of natural and salutary exertion.—Tr.

Of Inversion.

Latin inversion is what causes most trouble to young learners. Accustomed to express their own thoughts, and to hear those of others expressed, in the order of their vernacular tongue, (which alone is natural to them,) when this order is inverted or widely varied, they cannot conceive the meaning of a phrase, even though they understand each of its words.

The arrangement of words in French, for example, shows in what sense they are taken, whereas in Latin it is the terminations of words that determine the relation in which the word is to be considered.

Le Roi aime le peuple makes one sense ; but change the place of the words, and say *Le peuple aime le roi*, and you have a different meaning ; whilst in Latin it is a matter of indifference whether you place the word corresponding to *le peuple* or that corresponding to *le roi* before or after the verb ; but the termination will be different, and hence will be understood who loves or who is loved. For this reason, French words are not declined ; that is to say, have always the same termination ; their place to the eye and the prepositions preceding them serve to regulate their sense. In Latin, words change their terminations, in order to mark the different relations under which the same word may be considered, which causes Latin words to be found very often at a great distance from their natural connexion in regimen.

In the first books which I use, the words are arranged in the natural order, and under every Latin word is the corresponding French one. The French is Latinized. By this I mean that the French word explains the Latin word in its *literal* signification, as exactly as possible.

There is no reason to fear that this method will cause the learner to acquire bad French.

1st. The more exact our habits of mind, the better we write and speak. Nothing is better suited to impart exactness and accuracy of thought, than exercises in literal translation, because these impel the learner to precision and propriety of expression, and to an exactitude which hinders the mind from wandering off to thoughts which are foreign to immediate objects.

2. Literal translation causes the difference of the two languages to be felt. The more remote the Latin turn of expression is from the French, the less reason is there to fear that it will be imitated in discourse.

3. Besides, the French word is not pronounced till after the Latin. Thus the incorrect French idiom being interrupted, and being attached to the Latin, it is impossible that it should be transferred to ordinary conversation.

4. Finally, translation in general is made for one of two purposes : first, with a view to communicate the meaning of an author to persons ignorant of the original. A literal translation of the words of the author would, in such circumstances, be ridiculous. The translator ought to speak his own language, and not that of his author ; because he speaks only to people of his own nation. Thus, he ought to render expressions peculiar to the original by expressions peculiar to his own language. In one word, he ought to speak as the author would have spoken if he had written in the language of the translator.

2. But when we read so as to understand, for ourselves, the language of the author, it is evident we shall not gain our end but by learning the special signification of the words, and the particular turns of expression in the original. The easiest, in fact the only way of arriving at this point, is literal translation.

[What relates to ellipsis and idiom we shall reserve for another number, as the chapters on these subjects are of considerable length. It may not be inappropriate here to mention that the method of Dumarsais has been very ingeniously and successfully adapted to the study of the French language in the elementary books prepared by Professor Bolmar of the Franklin High School, in Philadelphia.*

Since we commenced our present article we have received and examined with much satisfaction a copy of a book entitled 'The New Latin Reader, containing the Latin Text, for the purpose of Recitation ; accompanied with a Key, containing the Text, a literal and a free Translation, arranged in such a manner as to point out the difference between the Latin and English idioms. For the use of beginners in the study of the Latin language. By S. C. Walker, Philadelphia. Boston. Richardson & Lord. 1829. 12mo. pp. 194.†

* See Journal of Education, vol. III. p. 214.

† See Notice in this number.

ART. V.—*Principles of Education.*

[A correspondent has favoured us with her views on female education, and with a view to enliven the form of communication, has thrown them into the following dialogue. The garb of fancy in which they are presented, will not, we trust, diminish their interest or lessen their practical utility.]

I send a few selections from Lord Bacon's account of the Bensalem Institution,* with part of a conversation on the state of arts and literature in that country, together with some of their principles of education, extracted from a work not published in this country. I know not whether they come within the prescribed limits of your Journal.

The conversation is carried on between a stranger who had been shipwrecked on their coast, and resuscitated from a drowning state ; and several of the natives, who are represented as possessing every accomplishment of learning, wit, and grace, that ever adorned human beings.

Stranger. Will you tell me by what means your sex as well as ours, throughout this island, have become generally well informed ? for I have found those of every age and profession not only fluent in conversation on all ordinary subjects, but well acquainted with those of difficult attainment in science and arts ; yet your children are much abroad, and seem to devote little time to labour and study.

Lady. It is true they bestow little *labour* on study ; but you greatly mistake the *time* ! we are always studying ; at least, always learning. Of books, indeed we make little comparative use while children are quite young ; but from early infancy they are required to *observe* and attend to whatever passes around them ; and as capacity increases, every thing is opened and explained. On this faculty of observation we ground almost every thing ; memory, comparison, consequent reasoning and abstraction. It is not only obvious that little proficiency can be made without it, but that it is the order pointed out by nature. The best foundation is laid for active useful education in those active sports and hazardous enterprises to which children are so naturally prone. They learn voluntarily to observe and examine a variety of objects and occurrences,

* See the *Novum Atalantis*.

as sources, facilities or impediments to their varied enterprises. We are cautious not to diminish these advantages. The mind can only be gradually led from the contemplation of these material things to investigate the principles of the same in more abstract science. By acquaintance with the things, the query is raised *how* they came, and the mind slides rather imperceptibly into the investigation ; and when curiosity is excited, the impulse is sufficiently strong without the addition of emulation. The elements of philosophy and geometry are in this manner understood, (not merely learned,) before a child can read.

Stranger. But have you any secret charm by which you are able to compel the observant attention of children so naturally inclined to versatility.

Lady. We have this charming requisition that they are not to be present at any discourse, entertainment, or exhibition, but such as they must observe and give some account of ; and in all lecturing and catechetical instruction we are attentive to point any thing calculated to amuse or interest the young mind, that we may make use of all that buoyancy or vivacity of spirit so predominant in young animals ; but which the course of chaining a child to a school bench must suppress by violence, or turn to vicious activity. If, for instance, the attention of a child be arrested by a curious mineral, flower, or insect, we would place a microscope before it, and display its parts, explain its properties, its mode of existence, arms of defence, and the several changes to which it may be subject, &c. pursuing the same course in making him acquainted with any of the lovely works of God, taking especial care to remember their loveliness. Parents seem to forget how greatly the feelings of children are influenced by the manner of treating a subject, or they would never threaten sending them to school as a punishment, or make them get a great lesson because they had been bad.

Stranger. Pray, Madam, can you teach astronomy by looking at the stars ?

Lady. Not alone by looking at the stars, for much of it is done by making rings, and drawing pictures on the floor. This applies to the geometrical or geographical part, and thus we explain or illustrate the mathematical terms belonging to the science. Children by early practice become very expert in drawing these diagrams, and take great pleasure in being able to assist any child younger than themselves. Perhaps you are

not apprized how very early children learn to take a sort of complacent pride in doing something useful. By keeping a child at these and such like amusements that are something more than innocent, we prevent his seeking entertainment in mean, low, mischievous pursuits, and cruel sports, to say nothing of the murder of his moral sense by finding pleasure in bloody acts of cruelty. Then, not having studied, at fixed periods, and stated tasks, any methodical science with a high sounding name, he is unconscious of having made any attainment of which he can be vain ; yet his actual knowledge may far exceed what would have been acquired by such study. To be sure these things are not done altogether without books ; but books are introduced just as circumstances, and the inquiries of a child demand them, and those particular parts pointed out connected with the inquiry. The book is continued in use, or not, just as the child is found able or not to profit by it. Here you may see, only good passions are brought into exercise, and the three Gorgons—Vanity, Envy, and Cruelty are shut from this door of entrance into the young heart, and thus, I hope, are several of your wonders satisfied : as how we become so learned without study, and how so accomplished without seeming vain. For you may perceive that acquiring the language of science no faster than its principles are unfolded, we are necessarily unable to prattle on a subject not understood. It is superficial knowledge, without knowing it to be such, that excites vanity. But you understand that our attainments are not gained by going a few years or perhaps months to a boarding school to finish our education. We are taught all our lives, by every person with whom we converse, at our work, at our meals, at our amusements, in walking, riding, sailing ; not, certainly, by set lecture, but it is a thing perfectly in course for each one freely to impart of his store, and any one expects his mistakes to be rectified by another better acquainted with a subject. We practice agreeably to the direction of the prophet for instructing in the divine law. ‘ Ye shall teach these things diligently to your children, when ye lie down and when ye rise up, when sitting in the house or walking by the way.’ Your philosophers have suggested many useful hints for correcting and improving the mind, but do not commence sufficiently early ; an erroneous bias is acquired before any attention is paid to the subject. Indeed your wise men seem quite inattentive to elementary instruction ; whereas, with us it is considered of primary importance how the opening of intellect is conducted.

If a child be properly taught how to instruct himself, at the age of twelve or fourteen, he will be able to do without a tutor. To hear a child recite lessons is a trifling part of the required instruction of early life ; such lessons are at best soon forgotten ; yet though forgotten, they would not be useless if the powers of mind had been brought into exercise in the acquisition ; but where the memory has been merely stored with words, when they are lost, all is lost. Excellence of memory seems to consist in the power of forming with facility happy, durable associations ; how necessary then that one be acquainted with a sufficient number of *things* themselves, or distinct simple ideas, before he can join words by association which shall be permanently advantageous ! Not possessing these, prerequisite propositions must be confined in the mind by associations so preposterous that their retention, if practicable, would be productive of injury rather than benefit. These primary ideas appear to me to constitute those powers of recollection, which metaphysicians tell us are so valuable, and so distinct from what is vulgarly called a great memory.

Stranger. At least, Madam, your people must make great use of books in the various languages you speak.

Lady. We do,—yet perhaps less than you would imagine. It is for the acquisition of language that our children now attend school ; yet that is not for direct instruction, but for conversation ; our schools being so ordered that but one language is spoken or taught in one house. Of course a child while there speaks the same language he reads, and all his studies are pursued in the same. If studying French, he would go through a course of French history, biography, and conversations ; manners, and customs of common life, and perhaps pursue chemistry in the same. By such course in a year or two he gets competent ideas of their language to judge of their modes of thinking, speaking and writing ; or, in other words, some notion of the genius of the people. A child will obtain nearly as much durable information while studying a new language, as if the subjects were pursued in his mother tongue, since the time and repetition requisite for retaining the terms, fix also the ideas. What think you now, Señor, of our study and no study, or system and no system ?

Stranger. I think, Madam, I would to God we had a similar method or no method, in my own country, for with us it is found to be an ever to be reiterated task ‘to teach the young idea how to shoot ;’ and when taught, it is an hundred chan-

1. The first of these is the fact that the
2. The second is the fact that the
3. The third is the fact that the
4. The fourth is the fact that the
5. The fifth is the fact that the
6. The sixth is the fact that the
7. The seventh is the fact that the
8. The eighth is the fact that the
9. The ninth is the fact that the
10. The tenth is the fact that the

The first of these is the fact that the
 Government has been unable to obtain
 the necessary information from the
 various sources of intelligence to
 enable it to make a proper
 estimate of the situation.
 The second is the fact that the
 Government has been unable to
 obtain the necessary information
 from the various sources of
 intelligence to enable it to
 make a proper estimate of
 the situation.

THE UNITED STATES OF AMERICA
DO hereby certify that
the within and foregoing is a true and correct
copy of the original as the same appears
on the records of the Department of the Interior
at Washington, D. C.
this 10th day of June 1906.
DEPARTMENT OF THE INTERIOR
BUREAU OF LANDS
WASHINGTON, D. C.

views and well disciplined minds have taken up the business of instruction in obedience to the claims of society ; the ancient doctrines concerning the study of languages have undergone a strict scrutiny and, as a natural consequence, are yielding to more enlightened ones ; the amount of information requisite to a polite education has increased so considerably, that a method of learning languages more compendious than that hitherto practised, has become absolutely necessary ; and we observe that the books required for the purpose appear, and the most approved seminaries instantly avail themselves of their assistance as a matter of course.

This state of things is the natural result of the recent excitement in the public mind on the subject of education, which has served to attract the attention of some of the most gifted minds in the community not only to its general importance but even to its minutest practical details. It is found that too much—a great deal too much of the precious time of the young has hitherto been devoted to the learning of Latin. On inquiring the reason of this waste of time, it is found to arise not from any intrinsic difficulty in the study, but from an unnatural and preposterous mode of instruction which requires the child to learn the philosophy of the language before he is possessed of its facts ; and to commit to memory the whole theory and structure of a very artificially constructed language, before he can speak, write, or translate a sentence of that language.

We think it will be matter of astonishment to the generation which shall succeed us, that so absurd a system could have prevailed so long. It is indeed a curious and surprising fact, that instruction in a language which has ever been considered as forming the basis of a polite education, should have been among the latest to derive aid from the light which the inductive philosophy has long been shedding on every other branch of liberal information. We are happy to learn that the natural and philosophical mode of teaching language—the method which places the *facts* of language before the *theory*, in the order of instruction—the method recommended by Locke, and practised by Du Marsais—is rapidly making its way in this country under the auspices of such able instructors as Professor Bolmar and Mr Walker.

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* American Journal of Education, No. 28, (for April, 1828.) p. 215. Re-
VOL. IV — NO. III.

cos to one that this same young shoot never comes to maturity. But how is this every day mode to be introduced ? In the early part of life they are universally, and it seems very properly entrusted to females, who are certainly not exactly prepared to afford instruction in season and out of season, even were they sensible of its utility ; but though a large portion of our females have the advantage of what we count good schools, yet they are too little in the habit of observing the connexion of causes with effects, and of reflecting on the minute circumstances and influences that operate in directing the temper, mind, conduct, and character of a child ; and can scarce conceive that the habits acquired in childhood can have any abiding influence over the character.

ART. VI.—*The New Latin Reader, containing the Latin Text for the purpose of Recitation, accompanied with a Key, containing the Text, a literal and free Translation, arranged in such a manner as to point out the difference between the Latin and the English Idioms. For the use of Beginners in the Study of the Latin Language. By S. C. Walker, Philadelphia. Boston. Richardson & Lord. 1829. pp. 194.*

THE long struggle, which the natural mode of teaching languages has had to maintain with the artificial or scholastic system, is one of the most curious facts in the history of education. Since the days of Locke and Ascham there have always been men of enlarged and philosophical as well as practical views, who have contended for the propriety of instructing children in Latin and Greek as well as in the foreign modern languages in a manner somewhat analogous to that in which they learn their vernacular tongue ; and there has always been a host of instructors and others whose immediate interests or long cherished prejudices have rendered them decidedly hostile to every thing like innovation however agreeable it might be to the dictates of philosophy and common sense. That which reason and philosophy have long recommended in vain to this interested class of persons is now imperatively urged—in a manner forced upon them, by the influence of public opinion. The time, for devoting seven years of youth to the painful drudgery of grammar and lexicon, is now past. Men of liberal

views and well disciplined minds have taken up the business of instruction in obedience to the claims of society ; the ancient doctrines concerning the study of languages have undergone a strict scrutiny and, as a natural consequence, are yielding to more enlightened ones ; the amount of information requisite to a polite education has increased so considerably, that a method of learning languages more compendious than that hitherto practised, has become absolutely necessary ; and we observe that the books required for the purpose appear, and the most approved seminaries instantly avail themselves of their assistance as a matter of course.

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general features of this system and a particular account of its application to the French language and the considerable improvements made in it by Professor Bolmar. Mr Walker has applied the system of Du Marsais and Bolmar, in its most improved form, to the Latin language and the able and faithful manner in which he has prepared the elementary work before us, augurs well to the future progress of the system.

The 'New Latin Reader' comprises

1. A well digested series of short and familiar sentences arranged with reference to their syntactical form.
2. The 'Historiæ Sacræ' of De L' Homme.
3. 'Narrationes Selectæ.'

Each of these three parts is first inserted in the volume in the manner described on the title page, viz. the text with a literal and free translation; intended to be used in learning the lesson. In the latter part of the volume the pure text is given for the purpose of recitation. Thus the pupil is furnished with the most efficient aid in order to learn his lesson; but he is required to translate it at recitation, both freely and literally without any thing before him but the Latin text. He has every possible assistance towards learning his lesson; but *he must learn it.*

As it respects the method of instruction proposed in the 'Reader' and the advantages of the new system as applied to the Latin, it is but justice, however, to allow Mr Walker to speak for himself. Concerning the system, in his preface, he says

'The merits which it claims are these.

'1. It gives the pupil an exact knowledge of the *literal meaning* of each root in the original.

'2. By means of the prepositions and auxiliaries, it gives the meaning of each root as modified by *inflexion*.

'3. It gives a translation of *phrases* or *idioms*, by which the true import of the original, and the difference of the idioms are learned with precision.

'4. The Latin words are arranged after the English order in the *Key*.

'5. The pupil is required to recite from the *pure Latin text*, and is therefore obliged to prepare his lessons with care and diligence, and to compare together the Latin and English arrangements of words.' pp. 3, 4.

view of *Œuvres de Du Marsais*, *Bolmar's Perrin's Fables*, and *Bolmar's Telemachus*.

The method of instruction he thus describes.

'The pupil begins to translate and to study Latin Grammar at the same time. He is directed to study for each recitation, a small lesson in Grammar, and, by the aid of the Key, to prepare for translation a suitable portion of the Latin text. To assist him in learning to spell the Latin words and to remember their meaning, he is required to transcribe into a small copy book as much of the lesson as possible, writing first a Latin word, then its meaning in English, and so on. The Instructor examines the copy book from time to time to see that it is faithfully executed.

'At recitation, the pupil is examined in the Latin Grammar—then he reads the pure Latin text with attention to pronunciation—then gives a literal translation of each word of the original, in the order of the Key—then gives a translation of the *phrases* and idioms, also prepared from the Key.

'☞ Observe that the pupil always recites from the pure Latin text, and uses the Key only in *preparing* his lessons.

'After the pupil has in this manner gone through the Grammar and perhaps half way through the Latin Reader, he is to have frequent exercises in ~~the~~ *inflections* of *nouns*, *adjectives*, and *verbs*, to be prepared from the Grammar by the aid of a *Dictionary* or *Vocabulary*. Before he has finished the Latin Reader, he will be prepared for exercises in the application of the rules of syntax.'—p. 4.

We regard the method of studying Latin proposed by Mr Walker as very decidedly superior to the prevailing one. It is recommended by philosophy as well as by common sense. It is a mode of instruction calculated to interest the youngest class of learners instead of perplexing and fatiguing them in the manner of the ancient method. It is particularly suited to the purposes of maternal instruction and to the use of those advanced beyond the period of childhood, who may wish to instruct themselves. Lastly, it is admirably calculated for the purposes of monitorial instruction.

We have already so fully borne testimony to the general merits of the system and to the faithful execution of this work in particular, that it is scarcely necessary to add a cordial recommendation of Mr Walker's book, to teachers and parents throughout our country.

ART. VII — *Education in Cuba.*

[The following information regarding the state of education in the island of Cuba, is furnished by one who has enjoyed opportunities of actual observation, and who takes a deep interest in whatever relates to the improvement of instruction. The facts mentioned in the subsequent paragraphs are in themselves important ; but they will be peculiarly gratifying to those of our readers who were not aware that public education was a privilege so valuable or so generally accessible in that quarter of the world, as it seems, from this account, to be.]

THE subject of education has, for some time past, been receiving increased attention from the government and the more respectable class of citizens in Cuba. The 'Royal Patriotic Society of the Havana' has for some years exerted a most beneficial influence in affording to the citizens of that metropolis the means of instruction in the liberal sciences ; while the Bishop of Havana and several other learned ecclesiastics have entered most zealously into the cause of popular education. Parish schools have recently been erected in many of the towns and villages in the interior of the island, where reading and writing were formerly rare accomplishments. These schools are usually under the immediate direction of the inferior clergy ; and the solicitude manifested by the parents to avail themselves of the advantages for instruction which they offer, affords a pleasing presage of the intellectual advancement of the rising generation.

The most important institution for public instruction which the island boasts, is undoubtedly that which is styled 'El Real Colegio Seminario de San Carlos,' in Havana.

The College is situated in the rear of the beautiful cathedral where the remains of Columbus are deposited. It is a large quadrangle with a court in the centre, surrounded by open balconies, which are supported by arcades. The professors' rooms and the halls, for lectures and recitations, open into these balconies. The building is of stone, two stories high, and in the massive style of architecture which usually prevails in Spanish cities.

There are seven professors attached to the College ; two of the Latin language, one of Jurisprudence, one of Natural Philosophy, one of Mathematics, and two of Theology.

The Latin Classes contain 130 students.

The Class in Jurisprudence 250.

The Class in Philosophy and the Natural Sciences 210.

The Classes in Mathematics and Theology are comparatively small.

The hours of attendance are from seven o'clock till nine in the morning, and from three till five in the afternoon. Nearly all the scholars reside with their parents or guardians in the city, and the younger classes in Latin are required to prepare the greater part of their exercises at home. In these classes, monitorial instruction is used to a certain extent.

In the higher branches, instruction is communicated principally by lectures, with frequent examination of the students ; all of whom take notes of the lectures, and consult the authorities to which they are referred by the lecturer, as well as the text book, which serves as the basis of the lectures. The practice of learning a lesson by rote from the text book, and repeating it to the Professor is unknown in these classes.

Of the whole number of students, only thirtyeight board in the college. Of these, twentyfour are charity scholars, who are nominated by the Bishop, the most munificent patron of the College. The remaining twelve pay two hundred and fifty dollars per annum for their board. The whole number of students receive instruction gratis. So that this College, so admirably suited for instruction in the highest branches of learning taught in the country, is, to all intents and purposes, a free seminary. The humblest citizen of Havana may secure its advantages for his sons.

The public examinations of the students, which take place frequently, are conducted in a manner calculated to keep alive the interest of the citizens in the institution, at the same time that it cannot fail to elicit the best exertions of the students.

A professor issues a small printed pamphlet, announcing that he will, on certain days, generally three or four days in succession, publicly examine a number of the students of his class on certain propositions and principles of the science taught by him, a synopsis of which is contained in the pamphlet.

On the day specified, the large quadrangular court in the centre of the College building is prepared for the reception of company ; a band of music is in attendance ; the apparatus for philosophical and chemical experiments is brought out, if those sciences are to be treated of ; and the balconies and arcades of the College are, at an early hour, crowded with the parents

of students and other friends of the college, and a numerous collection of foreigners and strangers.

In the presence of this brilliant assemblage of nobility, talent, and fashion, the young gentlemen of the College are required to pass an examination in the given science, without any notes of their own ; and if it should be one of the natural sciences, they must themselves perform experiments, and lecture extempore, on the principles which those experiments illustrate. The delivery of speeches, committed to memory, forms no part of the exercises on these occasions.

It is a most auspicious circumstance for the future prosperity of this excellent institution that it has recently been placed under the direction of Don Justo Velez, a gentleman, who is admirably fitted for the station which he occupies, as well by his learning and talents as by his extensive observation of the seminaries of learning in Europe and the United States. To his exalted character and pleasing manners, many of the friends of science in this country, as well as in Cuba, can bear testimony.

ART. VIII.—*A Lesson in Botany.*

IN addition to the remarks in the last number of the Journal, we give the following as an example of the method employed by the writer in teaching a class of a dozen girls from eight to twelve years of age.

A lesson is first recited from the *Child's Botany*, a book, which has few equals in interest or instruction to young scholars. This lesson is short, that the mind may not be confused with too many ideas ; but is required to be thoroughly committed. As the recitation goes on, every scientific term under it is familiarly explained, and additional illustrations are given from the plants with which the class are already acquainted.

A specimen is then taken up, say the scarlet Pimpernel, (*Anagallis Arvensis*,) and we proceed, this way.—Teacher. How many *stamens* do you find in this flower ?

Pupil. Five.

T. It is therefore of what class ?

P. Of the fifth class, called *Pentandria* ; and of the first order, because it has but one pistil.

T. The corolla in this plant is said to be *wheel-shaped*, it having five parts, or divisions at the edge. But is it *monapetalous*, or *polypetalous* ?

P. *Monapetalous*, because all the parts are united at the bottom into one.

T. How do you find the stem, square or round ?

P. Square.

T. In this plant several stems grow from one root, and they all spread about on the ground in a circular form. The stem is said to be *procumbent*, that is *lying down*. Of what shape are the leaves ?

P. *Ovale* or egg-shaped ; here is the plate to illustrate that shape.

T. What else do you find remarkable about them ?

P. They are beautifully dotted on the under side with purplish spots.

T. Of what colour is the corolla ?

P. Of a bright scarlet.

T. This is an extremely delicate flower. When I put it in my tin-box an hour ago, the flower was *reflexed*, that is, the corolla was bent backwards, to the stem, so that the stamens and style stood out naked and separate. It is now turned upwards into a *tubular* form. A similar alteration takes place in a change from sunshine to cloudy weather ; on which account the plant in England received the name of the " Poor Man's Weather Glass." You will find it in this vicinity mostly on dry rocks not far from the sea, where it frequently spangles the ground with its brilliant and beautiful flowers, much like the sandwort, (*Aranaria*.) It is thus, that the God of Nature has furnished every soil with its appropriate product ; and that we are frequently surprised by beauty and elegance, where we had expected only sterility.

P. Here is the St John's Wort.

T. In what class would you place it ?

P. In the thirteenth, because it has many stamens.

T. There you are in an error. Look at the position of the stamens : in how many bunches do you find them collected ?

P. In three. O ! then it is of the eighteenth.

T. Yes ; the class named by Linnæus *polyadelphia*, or *many brotherhoods*, because the stamens are united in distinct sets. Of this class the vicinity of Boston affords only one genus, the *Hypericum*. Other countries, however, furnish enough to make the number nearly 60, which consists of eight or ten species.

This species is called *Hypericum Perforatum*, the *perforate* of St John's Wort, from a peculiarity in the leaves, which I want you to examine. Hold one of the leaves between your eye and the light.

P. It is covered with bright dots.

T. These dots are called *pellucid*, a term which signifies that they admit the light to pass through them, and yet are not entirely transparent. All the St John's Worts in our climate possess this property in a greater or less degree ; and by this single circumstance you may know this race of plants from all others. In one or two species, however, the dots are imperceptible without a magnifier. How many styles has this plant ?

P. Three.

T. Yes : and the number varies in different species ; some having five. In what kind of soil did you find it ?

P. In a dry pasture, where I saw hundreds of others, many of them not yet blown.

T. You will see a curious peculiarity also in the stem. A prominent line runs up on each side, making it almost two-edged. Are the leaves opposite or alternate ?

P. Opposite and oval.

T. Entire or notched ?

P. Entire.

T. It is a *perennial* plant ; what is meant by that term ?

P. That the root endures several years.

T. This is, in many places, nearly as common an ornament of dry and sandy soils, as the troublesome White Weed, (*Leucanthemum Chrysanthemum*.) I know of no use to which it may be applied either of fodder for cattle, domestic economy, or medicine. Yet it would be taking too narrow a view of the works of creation to say that any plant or animal was created in vain ; because its utility happened not to be manifest to our limited reason.

ART. IX.—*First Lessons in Latin, upon a new plan ; combining Abstract Rules with a Progressive Series of Practical Exercises.* By Charles Dexter Cleveland. Boston. Carter & Hendee. 1829. 12mo. pp. 197.

In our last number we promised some notice of this work. We are of the opinion that it needs but be known, to be highly valued and extensively used. We cannot better exhibit it to our readers, than in the words of the author, whose preface here follows.

‘It is not necessary to commence a few prefatory remarks to this little volume, with any apology for its appearance. The character of the present age does not call for one, distinguished, as it preeminently is, for its exertions in the department of education ; and looking with complacence at least, if not with approbation, upon every attempt to improve the course of youthful instruction.

‘Such an attempt is the present work. As soon as the author entered upon the duties of an instructor, he felt convinced of the inadequateness of the present method of initiating youth into a knowledge of the Latin language ; thinking it contrary to the dictates of common sense, as well as to the principles of sound philosophy, to commence the instruction of youth in any language, by giving them abstract rules to be committed to memory, unattended with any practical exercises, by which those rules might be clearly understood and determinately fixed. Accordingly he began with his own pupils, upon the black board, the germ of the system of which the present volume is the maturer growth, and found his theoretical opinions supported by the happiest practical results. The manuscript was then commenced, (December, 1827,) and shewn to a few friends—scholars and practical men—who encouraged its completion. Numerous avocations, however, have delayed the appearance of the work till the present time, when it is presented to the fraternity of instructors to examine, and to determine upon its merits.

‘The plan of the work is so simple that it hardly requires any explanation. The system of double translation has been adhered to throughout : examples being given, under most of the rules and formulas, of Latin to be translated into English, and of English to be translated into Latin. After a noun of the first declension has been declined, examples follow of nouns of the same declension in the oblique cases, the numbers, cases, and definitions of which will be required of the pupil. Similar exercises are prepared upon all the declensions ; upon the adjectives, verbs, and rules of syntax ; vocabularies to which will be found at the end of these divisions respectively. Thus the learner’s ingenuity will be exercised, and thus the study of grammar will not be a mere task of the memory, but will make demands, simultaneously, upon the reflection and understanding.

‘In the Syntax, the arrangement of Adam’s Latin Grammar has been strictly adhered to, and even its rules have, generally, been

given without alteration; for so far from the present volume having been designed to supersede, it is rather intended as an introduction to that most valuable work; and of course, the nearer the approach to its forms and general arrangement, the better.

‘It will be perceived, at once, that the “FIRST LESSONS” contain only the *general principles of the language*, without any of its anomalies. This, it is thought, must also be considered an improvement—**THAT OF EMBODYING THE ESSENTIALS OF THE LANGUAGE.** The reason why boys generally advance so slowly in the early stages of their Latin studies, is, that so much has been put before them, that they have been both utterly confused, confounding the *essentials* with the *unessentials*; and quite discouraged, seeing so much to be learned.

‘The catechetical form has been adopted, from a conviction of its superiority for infusing instruction into young minds. Different individuals will propose a question, the same in reality, in a different form; and even the same person will, at times, vary his mode of expression. But when children know exactly what will be asked, they will know exactly what to answer.

‘In the composition, the most simple style and language have been used; for those only who have had experience in instructing, know how much the language of schools books, generally, is above the comprehension of those for whom they are designed.

‘The present volume will shortly be followed by a “SEQUEL—” a Reader, with notes referring to Adam’s Latin grammar for all the exceptions and irregularities of the language not contained in the “FIRST LESSONS.”’

The discouragements alluded to by the author may be understood, even by those who are unacquainted with the subject, from the opinion of one of our ablest instructors, that ‘it generally takes boys about a year to commit the grammar,’ that is, they must labour a year upon *unintelligible forms*. This labour of committing to memory is unavoidable, for we believe that even Hamilton does not profess to get rid of it entirely. Mr Cleveland has endeavoured to abbreviate it, by confining it to the ‘*essentials* ;’ and to alleviate it, or rather to infuse an interest into it, by making *intelligible* what was before *unintelligible* ;—by showing the pupil, that what he is committing has a meaning and use, that that meaning may be clearly understood, and that there is a pleasure in understanding it.

We regret that the author did not give the explanations, which he professedly leaves to the instructor, in his note on page 2; particularly as we never yet saw a definition of *genders*, which, taken in its most obvious sense, was not absurd.

- ART. X.—1. *The Latin Tutor, or Exercises in Etymology, Syntax, and Prosody, Compiled in part from the best English Works, with Additions.* By Frederic P. Leverett, Principal of the Public Latin School in Boston. Boston. Hilliard Gray, Little, & Wilkins. 1829. 12mo. pp. 348.
2. *Key to the New Latin Tutor, or Exercises in Etymology, Syntax, and Prosody.* 1829. Boston. Hilliard, Gray, Little, & Wilkins. 12mo. pp. 100.

THIS is incomparably the best work on this subject, extant in this country. It is published without preface or remark ; which we mention only to express our regrets, that we are thus deprived of the opportunity of extracting, and presenting to our readers a description of the materials, arrangement, and peculiar facilities of the work, in the author's own words. It embraces the following topics. Etymological Exercises ; Exercises in Syntax ; Explanations of Idioms, with exercises ; a kind of vocabulary explanatory of Idiomatic Phrases, and Prosody. Under all these heads, the book is as copious as could be desired ; indeed, as much so, perhaps, as the just consideration of its utility would warrant.

The system followed in the Syntax, is nearly as follows. After the statement of each rule or principle, there is given a model, or English sentence correctly translated into Latin, sufficiently extensive to illustrate all the variety of forms in which the rule may be applied. Then follow exercises, after the usual method, of English sentences in one column, and the corresponding Latin words in their primitive form, in the other. Next, a quantity of 'English sentences to be turned into Latin,' without the correspondent Latin words ; but with occasional hints interspersed, and an explanation of the more difficult words at the close. Then comes exercises in phrases, if the rule involves any. The whole work is also interspersed at proper places, with recapitulatory Exercises. Of the idioms and Prosody, (the large half of the book,) to attempt a description, would be to transcribe them ; or at least, to go into details, which the proper character of these notices will not allow. The rapid sale and unusual approbation, which the work has hitherto experienced, bear sufficient testimony to its excellence ; of which, truth compels us to say, but a very faint idea can be found from the sketch here given. The author has done a service to the cause of letters, which will not, we think, be soon

forgotten ; and we sincerely recommend the book to the examination of instructors. The typographical execution ought not to be passed unnoticed. The Key is by the author of the New Tutor, and contains all the exercises of the same in correct Latin. By this means the labour of teachers is very greatly alleviated, and a service rendered to the cause, which they cannot but highly appreciate. The Key 'will be sold to instructors only.'

INTELLIGENCE.

Essay on the Honey Bee.

[Concluded from page 186.]

Of the construction of the Combs and Cells.—There appears on examination an astonishing air of grandeur in the internal arrangement of a bee-hive. The curious eye can never be weary of contemplating these ingenious workshops, where thousands of labourers are constantly employed in various departments for the common interest. The regularity and geometrical exactness in their works, their magazines replenished with every necessary for their support, the young brood in their cradles ; and the tender care of their nursing mothers towards them, the art and skill displayed in the construction of these nests or cradles, all combine to exhibit a picturesque scene calculated to strike the contemplative mind with wonder and admiration. The combs always originate at the top or arch of the hive, in parallel sheets extending to the bottom, with their edges towards the front. There is usually an interval of one third of an inch between each comb, and this for substantial reasons. Were the combs too distant, it is evident that the bees would be greatly dispersed, and unable to communicate their native heat, reciprocally, without which the eggs could not be hatched nor the brood receive sufficient warmth. Were the combs too close, on the contrary, the bees could not freely traverse the intervals, to carry on their necessary labours. A certain distance therefore, always uniform, is requisite, and nature, which has taught bees so much, has instructed them in the regular preservation of an equal distance throughout the whole surface of parallel sheets of comb. In order to shorten the courses round the surface of large combs, and between their edges and the sides of the hive, they open perpendicular regular streets wide enough for two bees to pass abreast, throughout their whole city. The sheets of comb are uniform, and in size proportioned to that of the hive, but in hollow trees and sometimes in other situations they extend five or six feet in length, and however ponderous when loaded with honey, they are suspended from the top, to which

they are cemented with an adhesive substance called propolis. The thickness of each comb seldom exceeds an inch, and a block of twelve or thirteen inches square, according to Reaumur's calculation will contain 9000 cells.

The combs are constituted by a multitude of cells united, of different diameters adapted to the different kinds of bees to be bred in them. The royal cells in which the queens are bred being of a very peculiar form, and fashioned with great labour and skill. They are of a pyramidal form, with a wide base and a long diminished top, hanging perpendicularly in the hive, the point downwards. The cells for drones are in diameter three and one third lines, and those of the workers two and three fifths lines, and these dimensions are invariably observed in all hives. The structure of the cells has ever excited admiration in all who have examined them with the eye of curiosity; as it is demonstrable, that these little insects have intuitively discovered the only figure adapted for containing the greatest possible quantity in the least possible space. Their form is exactly hexagonal, by which no room is lost, as the circumference of one makes a part of the circumference of another, while, were they contrived in any other shape, there could not be so many cells of equal capaciousness in the same given space. These cells, which are very thin, are strengthened at the entrance by a fillet of wax, and also at the bottom by the angle of one admirably falling in the middle of its opposite. The cells which contain the young brood are separate from those which are the receptacles for the honey, but the same cells are employed for several successive broods, and when the whole have come to maturity the cells are cleaned out and filled with honey for the winter store. It may not be easy to conceive how bees can fill horizontal cells quite full of honey, and yet prevent it from escaping, but each cell is sealed with a flat covering most ingeniously devised. A circular border is formed round the mouth of the cell which is gradually diminished by other concentric circles, until the aperture remains a point capable of being closed by a single grain of wax. Thus we see the combs and cells constructed with profound skill, forming a wonderful and beautiful fabric, guided by that instinct which the Creator has seen fit to impress on the constitution of our favourite insects. Can the mechanical art here displayed, be exceeded by the reasoning powers of intelligent man? Should a comb in its construction take an oblique direction, it is artfully brought into a perpendicular line to preserve the regular order in the streets. In October, a certain comb burthened with honey, had separated from its attachment, and was leaning against another comb so as to prevent the passage of the bees between them. This accident excited great activity in the colony, but its nature could not be ascertained at the time. At the end of a week, the weather being cold, and the bees clustered together, it was observed through the window of the box that they had constructed two horizontal pillars, betwixt the combs alluded to, and had removed so much of the honey and wax, from the top of each, as to allow the passage of a bee: in about ten days more, there was an uninterrupted thoroughfare, the detached comb, at its upper part, had been secured by a strong barrier, and fastened to the window with the spare wax. This being accomplished, the bees removed the horizontal pillars first constructed, as being of no farther use.*

* American Quarterly Review, June 1828.

Whether we consider bees in the light of machines, a sort of animal clock-work, or as having a soul connected with the machine, it is certain that they are incapable of improvement in instinctive sagacity, nor can they deviate materially from the laws which nature has prescribed. Their instinctive powers are exactly sufficient for their purposes, and all their wonderful works, habits, and economy are precisely the same now, that they were known to be in the infancy of their history. And so long as our fields and gardens shall afford flowers, so long may we expect to share with the busy bee in their luxurious food.

Bees, by some means inexplicable to us, procure a peculiar resinous substance called propolis, or bee glue, with which they stop all crevices, to exclude insects, air, and light; and employ it as a tenacious cement, to attach their combs to the top of the hive. Another substance of indispensable use bees have the faculty of collecting from the stamina of flowers, known to botanists by the term of pollen, or farina. This substance they collect, from early in the spring till interrupted by the frost in autumn. They transmit it to their hives in the form of little balls or pellets attached to the hollow of their legs, and store it in their cells. It is of a yellow, or straw colour, or reddish, according to the flower from whence it is obtained. It is converted to no other use in the hive but as food for the young brood, and is therefore called *bee bread*, and the workers take it grain by grain in their teeth and carry it to the mouths of the larvæ. The fact has been decided by experiment that without this substance the young brood cannot be sustained, and the whole species would be annihilated. By some apiarians, pollen has been considered as the basis of *wax*, but it is now ascertained that it possesses none of the properties of wax. It is decided that wax is formed from honey, elaborated into form by a process which it undergoes in the stomachs of the bees; the particular operation is a secret concealed from our research. *Honey* is a choice fluid extracted from the nectary of the finest flowers. The bees commence their labours early in the spring, and continue their employment with indefatigable industry till autumn, and it is not uncommon for a single swarm to accumulate from 80 to 100 pounds of honey during the season, besides constructing the combs and nursing the young brood. Being a vegetable production, the properties of honey depend entirely on the nature of the particular plants from which it is extracted, and its qualities are different in different countries. The comb first made by a new swarm, is of the purest and most delicate white, and the honey which it contains is of the purest kind and of delicious flavour, and is called *virgin honey*. The flowers which appear earliest in summer, yield honey much superior to that which is obtained in autumn.

The absurd and cruel practice of destroying bees in autumn to obtain their stock of honey, still too generally prevails. The method is, to suffocate them by the fumes of burning brimstone, which ought upon every principle to be abandoned. It is for our interest to multiply the species; to annihilate differs but little from that of skinning a favourite horse for the sake of his hide. By the improved method of constructing hives furnished with boxes, we have the advantage of obtaining the purest honey, free from bee bread or the young brood, and it is a luxury which no one would be willing to relinquish who has once enjoyed the repast. The boxes may be taken out at any time during the summer without destroying the bees, and each hive will

afford about thirty pounds of honey, reserving a sufficient quantity for the bees' subsistence during winter.

Of Swarming.—When a hive is overstocked with numbers, and crowded for room, preparation is made to send out a new swarm, and form an independent colony, which is always headed by a queen. This seldom takes place before the month of May, nor after July; it is always on a clear sunshine day, and between ten and three o'clock. The bees suddenly appear in great numbers at the mouth of the hive, and rush out in a tumultuous manner, and with a buzzing noise, rise into the air, flying in all directions. In a few minutes the queen and her suit alight on some neighbouring shrub or branch of a tree, and the whole posse gradually unite round her in a large cluster, clinging to each other by their legs. They are now put into a new hive where they immediately commence their labours and increase their numbers. When swarming, bees are less disposed to sting than at any other time, which may probably be ascribed to their being freed from the charge of their young brood, but every movement indicates attachment and devotion to their queen; whatever direction or stand she may take, she is the rallying point, where the multitude assemble. In one instance the queen took her stand about the head or neck of a young woman who was assisting in hiving a swarm; instantly the whole upper part of her body was covered with bees. The spectators were exceedingly alarmed lest she should fall a sacrifice. The owner urgently directed her to be firm and stand perfectly still while he searched for the queen. After much difficulty she was secured and put into the hive; the bees were now dispersing, but the queen unfortunately returned to her station, and pressed into the cluster as if to elude pursuit, and the bees renewed their station. The affrighted girl cried out for assistance; most fortunately the queen was again taken and secured in the hive, when all her people followed and left the girl without a single sting. Had she acted in opposition to the bees and excited their wrath, it might have been at the expense of her life. The late Rev. Dr. R——, having had occasion to hive a swarm of bees, perceived that they were flying before him and buzzing round his head, he followed them to a considerable distance, till at length it was observed that the queen had alighted on the corner of his hat; finding himself thus crowned by her majesty, the doctor deliberately returned home with his charge, and accommodated the royal family with appropriate apartments. An instance may be mentioned of a swarm of bees voluntarily entering the garret of a dwelling house through a crevice under the shingles. They attached themselves to the sides of the chimney at the gable end. In this situation for three years past they have greatly increased, and accumulated comb and honey more than sufficient to fill a barrel, from which the family receive a handsome rent at pleasure.

Notwithstanding their capability of defence, bees are subject to the annoyance of numerous enemies. The most destructive in our country is the bee-moth or miller. This insect destroyed more than a hundred hives in a few towns in this country the past season, and in many places bees are entirely annihilated by their ravages. It has long been a desideratum to devise a preventive of their depredations, and there is great reason to hope that a remedy has been discovered, and

is announced in a treatise on the subject of bees just published by Messrs. Marsh & Capen of Boston. The kingbird, martin, and others are enemies to bees, and watch opportunities to take them on the wing. But of all others the bear is their most formidable enemy. It is recorded by good authority, that a bear has been known to take a hive of bees in her paws and carry it to the nearest river or pond and plunge it in to drown the bees that she may feast on the spoil. In countries therefore, frequented by bears, beehives are secured by being chained to a wall. Few persons are aware of the great profits and advantages arising from the culture of bees. No country possesses greater advantages for their cultivation than our own, and we know of none in which it is more grossly neglected. The time and the capital required is of little importance. Mr. Huish, an English apiarian, asserts that two hundred hives may be properly managed by one person, with some slight assistance, during the swarming season. He states the profits of five years, on a fair and equitable scale, making, at the same time, fair and ample allowance for the losses which even the most skillful apiarian cannot prevent. 'Suppose a person purchases a swarm for one guinea, the actual profit at the end of five years will be 163, 14 4 sterling. The great importance of this branch of agriculture to a country will appear, when it is considered that England pays annually to the north of Germany, and Italy, 80,000*l.* sterling for the produce of the bee.' According to a modern author, it has been estimated that the little island of Corsica, in former times, produced no less than 400,000 lbs. of wax, and six or eight million pounds of honey, annually: an immense source of wealth for a little island, and all from the labours of a little insect. The culture of the bee is a particular object of the Hanoverians; their produce of wax in 1787, was estimated at 300,000 lbs., and of honey, 4,500,000 lbs., a most incredible quantity to be collected in one year.

Even in America, honey and wax are imported to a very considerable amount, but were proper attention bestowed on the subject, the necessity for importation might be entirely superseded. A hundred fold more bees might be supported than now have existence in our country. An apiary would be a source of profit and amusement, as an appendage to every rural establishment. With great propriety therefore, we may enjoin it upon our friends, in the language of the French bishop to his impoverished clergy, '*Keep bees, keep bees!*'

Central School of Arts and Manufactures, designed to form Civil Engineers, Directors of Mill Works, Heads of Manufactories, &c. &c. Authorised by his Ex. M. de Vatismenil Master of Public Instruction. Founders, Messrs. Lavallé, Director; Benoit, Dumas, Olivier and Peclét, Professors.

This School was founded by the assistance, and is placed under the superintendence, of a council of improvement [perfectionnement,] composed of—

Messrs. the count Chaptal, peer of France, member of the Institute,

—Arago, member of the Institute,—Berthier, chief engineer of mines, member of the Institute,—Alex. Brongniart, director of the royal manufactory of porcelain, member of the Institute,—D'Arcet, member of the Institute,—viscount Héricourt de Thury, director of works at Paris, counsellor of state, member of the Institute,—baron Heron de Villefosse, district inspector of the mines, counsellor of state, member of the Institute,—Jomard, member of the Institute,—Laffitte, deputy,—Molard, senior, member of the Institute,—Odier, deputy,—Payen, chemical manufacturer,—Casimir Périer, deputy,—baron Poisson, member of the Institute,—baron Ternaux, deputy,—baron Thénard, member of the Institute and deputy.

PROFESSORS.

Descriptive Geometry.—M. Olivier, founder, former pupil of the polytechnic school, past officer of artillery, ex-professor of the school of application at Metz.

Natural Philosophy.—M. Péclet, founder, former pupil of the normal school, master of conferences at the preparatory school, ex-professor of Natural Philosophy at Marseilles, &c.

Practical Mechanics.—M. Bénéoit, founder, former pupil of the polytechnic school, ex-professor at the school of military engineers, [état-major] civil engineer.

General Chemistry and Chemical Arts.—M. Dumas, founder, tutor at the polytechnic school, professor at the Atheneum.

Course of Analytical Chemistry.—M. Bussy, former pupil of the polytechnic school, professor at the school of pharmacy.

Practical Natural History.—M. Ad. Brongniart, doctor of medicine, censor of the medical faculty of Paris.

Working of Mines.—M. Bineau, former pupil of the polytechnic school, engineer of mines.

Art of Building.—M. Goublier, architect of public works, recording and corresponding secretary of the council of civil edifices, &c.

Political Economy and Statistics.—M. H. Guilleminot, advocate at the royal court of Paris.

Design.—M. Leblanc, professor of design to the royal conservatory of arts and trades.

ADJUNCT PROFESSORS.

Descriptive Geometry.—M. ———

Natural Philosophy.—M. Colladon.

Mechanics.—M. Didiez.

Chemistry, Chemical Arts, and Analytic Chemistry.—M. Bergouhnioux.

I. *General considerations upon the design of the School.*

All men who reflect upon the great interests of the country, cannot look without fear upon the future prospects of French industry. For some years, the greatest part of the enterprises of industry have experienced serious obstacles; and the public, which in reality alone maintains them, and can alone maintain them, judges of their progress from their results. Since the latter are for the time being unproductive, many men, too little enlightened in regard to the nature of manufacturing speculations, without going back to the cause of these checks, hasten to withdraw from industry, even with great losses, the capital which they had invested in it; and most frequently they withdraw or refuse

them at the very moment when they are on the point of reaching the end they wished to attain.

Persuaded that hazard has not had an unimportant share in the events which have influenced the march of industry in a manner much to be regretted, the founders of the new School have wished to apply the remedy at the very root of the evil.

An attentive comparison has proved to them, that the superiority in industry of England was due to the division of labour and to the specific perfection of each element of industry in the country. In order to compete with her, it is therefore necessary to have, like her, highly experienced workmen, skilful overseers, directors of establishments still more skilful, and civil engineers, who, devoting themselves to one particular kind of construction of industry may sound all its practical difficulties.

These engineers, free, without any dependence upon government, and specially devoted to one or more branches of industry, are, in relation to each of them, what architects are in France in relation to building operations ; they give counsel, and direct the execution of their plans. It is to the civil engineers that England owes almost all the discoveries and improvements which have been made in practical industry ; since this profession is in England as honorable as it is lucrative. In France, civil engineers are still few. It is easy, nevertheless, to see of what importance to industry, men of extensive theoretical and practical instruction would be, exclusively occupied with a few branches of industry, whose fortune and consideration should depend solely upon their labours. Their importance would be so much the greater, as the engineers of the government would probably become, what they are in England, inspectors of works directed by civil engineers.

But if the most pressing want of France, that to which public attention is at present most directed, appears to be the creation of civil engineers, it is nevertheless to be feared that a school exclusively devoted to them cannot support itself without the assistance of the government, on account of the very considerable expenses which it requires. At all times France will feel how important it is to her to see engineers formed, who will render possible the ameliorations called for in many of the public services, engineers whose knowledge will spare the operators the errors which have so often brought on the ruin of their establishments, and who will inspire capitalists with the confidence necessary to insure their perseverance.

But we must repeat it, a school which should be solely designed to create civil engineers, could not at present support itself. Fortunately, the instruction which it is designed to spread, is equally suitable to other men, whom we have thought proper to invite to profit by it.

These are, directors of establishments and capitalists ; as well as young men who are designed for instruction in the practical sciences. For, in order that industry may develop itself in France, it is necessary that the practical studies should enter into our manners ; and that to such a degree, that each capitalist may find, either in himself or around him, useful counsel relative to the employment of his capital.

The moment appears favorable ; since, for some years, the importance of the study of the sciences has been generally appreciated, and if any doubts may still arise upon the various advantages which the country or individuals may derive from this study, they would be removed from

the high reputation which the polytechnic school has acquired, and by the happy influence which this fine establishment exercises over the public works. These doubts ought still to cease, even if one chose to set the polytechnic school aside ; for then, it would be sufficient to examine the actual direction of studies among the numerous young men whom a long and happy peace leaves free in their tastes and in their plans for the future. These young men have a remarkable tendency towards the study of the positive sciences, of which they feel the need in their actual or their future occupations.

But in the study of the sciences, as in all other studies, distinctions are to be established. With certain men, the search of truth is a lively passion, to which all their existence is consecrated, to which all their interests are sacrificed. These men, little numerous, study the sciences for their own sake. They love to sound their depths, to conquer, or at least to measure their difficulties ; and for them, instruction could never be sufficiently detailed, nor sufficiently abstract. The mass of young men, on the contrary, seek in the study of the sciences a complement of education, without which one finds himself at the present day out of place in society. They wish in consequence an instruction rapid, clear, and concise. They seek opinions ready made ; they fear difficulties, because they have not the time to investigate and conquer them. They shun details, because their attention is sustained neither by their direct interests, nor by a natural disposition of mind.

Between these two classes, so distinct, is found a third much more considerable than the two first, for whom the teaching of the sciences ought still to be modified. This is the class of men destined by their condition to make a daily application of scientific conceptions.

These ought to be considered as having in view only the interest of their future position. The sciences are for them instruments, which ought to be made of easy and sure application. In regard to them, every thing in scientific instruction ought to be subordinate to the end which they have in view : general ideas ought to be arranged like facts in their minds, without the circuitousness of uncertain theories or of complicated details. The phenomena which attach themselves to applications ought on the contrary to be studied with depth in their theoretical relations, and with detail in a practical point of view. In this manner each deriving a true and simple idea of the subject as a whole, the pupils will be initiated into the chances of practice, the accidents which it brings, and the remedies which experience has made known, or which theory points out, against a crowd of difficulties, minute, but nevertheless so important.

There are then three very distinct divisions for instruction. It would be easy to show how all the establishments arrange themselves under one of them ; but this general discussion would here be misplaced and useless. We wish to form a school of application ; by consequence, a school directed in the sense of the third class. This then is the only one which ought to fix our attention.

We are about to show under what relations the new school may be useful to the country, and at the same time from what motives its creation has seemed to us necessary.

Young men find in France, at leaving the colleges, special schools for law, medicine, theology ; civil, military, and maritime craft, the fine arts, and even commerce.

But those who are destined to practical industry no where find the instruction suited to them.

In fact, the establishments of practical instruction which exist in France, are, the conservatory of arts and trades, the schools of Chalons and Angers, and the schools of workmen established recently by government in a great number of towns, at the request of M. Dupin.

The isolated courses of the conservatory cannot attain the end which we propose to ourselves in creating our school. It is evident, and no one at the present day denies it, that in the study of practical science, oral lessons are not sufficient. They ought to be accompanied by frequent examinations, by numerous experiments and manipulations, by graphic representations, by solutions of problems, performed by the students under the eyes of the professors; and these various means of instruction ought to be combined among themselves in such manner as to form a complete system of teaching.

The schools of Chalons and Angers are designed only for certain particulars in mechanics.

Finally, the public courses of elementary geometry and mechanics, which happily are multiplied in these later times, are principally instituted in favour of the working classes.

It may then be advanced, that as yet there no where exists in France a complete instruction of the practical sciences, but it is no more than just to remark that this instruction could be organised only where the business people should be convinced that they all have need of the elements, well arranged among themselves, of geometry, natural philosophy, mechanics, chemistry, the art of building, statistics, and even of natural history. They ought to have this conviction now, for they see every day that the progress and discoveries of a particular industry are due to knowledges which seem to be wholly foreign to it.

The Central School of Arts and Manufactures is established in order to satisfy this want, warmly felt by French industry, of a complete instruction in the practical sciences.

This institution has then for its object to propagate the knowledge of geometry, natural philosophy, mechanics, chemistry, natural history, and statistics; these sciences being considered in their application to the arts of industry.

Its special end is to form directors of establishments, heads of manufactories, civil engineers, constructors, and besides to give to all those who might wish to take part in the speculations of industry the instruction which is necessary to them, whether to appreciate their value or to superintend their progress.

Independently of the special end, of which we have just spoken, young men, whatever may be their future direction, will find in the School a positive education, which will inspire them with a taste for labour, because they will see that labour guided by science is fruitful in useful results.

Thus the instruction which young men will receive at the Central School of Arts and Manufactures, will offer to those, who shall distinguish themselves, a new career, as honorable as it is lucrative; to those who are to direct establishments, an indispensable instruction, and to all, a complement to a college education, in harmony with the spirit of our institutions, and of which the importance will be more and more felt, in proportion as French industry shall receive new developments, and its political influence be better appreciated.

In the organization of the Central School of Arts and Manufactures, the ancient polytechnic school has been taken as a model, adopting always the modifications required by the nature of the end which it is desired to attain. Thus, all that concerns the too elevated mathematical theories has been set aside from the instruction, experience having shown that these theories are rarely useful in application, and that, where this is not the case, the simple enunciation of the results obtained by a transcendent analysis may be sufficient.

Hence, supposing the duration of the studies to remain the same, the students will be able to give much more time to graphic works, experiments and manipulations, and to receive an instruction more fully developed upon the various applications of the sciences to the industrious arts. This disposition allows besides of the introduction of many important improvements in the system of studies; first, by the creation of numerous meetings, which have for their end to excite in the pupils the spirit of invention so necessary in the practice of the arts, directing it towards a useful end, and carefully correcting the dangerous wanderings of an imagination too lively and too mobile; secondly, by causing the pupils to execute at least four hundred labelled sketches of folio size, representing machines, plans, and details of every description, taken with care from establishments in operation, or from models of abandoned machines, and in fine from the studies of construction, &c. They will thus acquire the knowledge of a multitude of facts, which will serve as bases to their inventionary compositions; thirdly, by laying before the meetings complete plans of establishments, in the course and at the end of the second year of studies, which shall have for their object to teach the pupils to study with care the varieties which should enter into the creation of a branch of industry, to compare them, and to combine them in the manner most advantageous according to localities.

A gold medal will be decreed to each of the three best plans of the last meeting, and the School will publish them at its own expense.

The founders have sought to facilitate the access to the School to all classes of society, and in particular to young men who might wish to devote themselves to teaching, by the creation of three half-pays, by the appointments allowed to the heads of studies, and by the temporary places of tutors given to the pupils who shall distinguish themselves in their studies.

All the courses of the School form in reality only one same and single course, because it is in vain to attempt to establish limits to confine the attention of the pupils to such or such a point, to circumscribe their education in plans more or less suitable to their respective destination. For us, practical science is one, and every practitioner ought to know it in its fulness, under penalty of being inferior to the competitor who shall present himself better armed than he in the lists. For us, too, practical science is composed of elements very clearly determined; for it is sufficient to establish that industry always exercises itself upon given materials, with the design of augmenting their value, and by having regard to certain geographical and social conditions, in order to point out with precision what are the sciences necessary to the practitioner.

Geometry teaches him the relations of bodies among themselves; natural philosophy teaches him to put them in motion; mechanics

shows him by what methods these movements are modified, diminished, or increased; chemistry, dividing these bodies into molecules, teaches him to separate the elements which compose them, to combine these under a new form, and to foresee all these effects, whether art determines them, or chance produces them. Thus far we suppose that the materials are given; but if the question is how to obtain them, the miner and the naturalist come to teach how to extract them, or how to produce them. All the operations of industry generally require particular constructions which the superintendent often finds it necessary to direct in person; and this he will learn to do in the course on the art of building. Finally, in order to arrive at the useful application of all these theoretical conceptions, it is necessary still to acquire a knowledge of the resources of the country, and of the social relations, either existing or prospective, in which one is placed; and it is to accomplish this end that our course on statistics and political economy is designed.

Let us add that if the ideas just advanced are comprehended in the sense which we attach to them, it amounts to demonstration that our courses differ from all analogous ones, and that they cannot resemble them for this reason, that they carry with them an idea of oneness, which perhaps has never been applied in teaching the sciences. We ought also to say that, even setting aside this idea of oneness which we have chosen, courses of the pure sciences and those of the practical sciences must still be necessarily considered as very different.

All the branches of industry, without exception, are founded on one or more of the sciences either exact or experimental. Nevertheless, the practical arts are not simple applications of the theoretical sciences. The mechanics, the natural philosophy, and the chemistry of the arts, are sciences by themselves, founded, it is true, upon the theoretical sciences, but which borrow from them only their method of investigation and the general principles which they possess, and which still are often insufficient.

Theoretical and practical researches differ essentially both in their nature and their end. In fact, in the theoretical sciences one has principally in view to establish general laws, and almost always neglects elements which in the arts are of great importance. Often, also, in order to simplify the calculations, suppositions are made which lead to results different from those of observation. Thus in the researches of the laboratory, no account is kept either of the number of operations, or of the time employed, or of the quantity of combustible consumed; and yet these various elements are very important in the arts, since they have great influence on the expense. Thus, again, many of the laws relative to the motion of fluids are inexact, because theory has built them upon hypotheses that are true only in certain circumstances which practice never presents. It may be added that the theoretical sciences are composed of generalities still too incomplete to admit the possibility of deducing from them the exact laws of that multitude of complicated phenomena, which are met with even in the most simple arts.

The preceding observations are undoubtedly sufficient to give a clear conception of what the founders mean by the *practical sciences*, and therefore to make it understood also that courses of the exact and experimental sciences, to which might be added the description of the

arts, could not constitute alone an instruction profitable to practical men.

In order that the instruction given in a school of industry may be truly useful to the pupils, it is absolutely necessary that the professors who are charged therewith should have been long occupied with the theories, which they have afterwards put into form by application, or have taken part, as engineers, in the various labours of the public service; because it is in the workshops, and there only, that one judges with certainty of the real importance of theories, of the manner of making use of them, and of the limits beyond which their useful operations cease. Again, it is absolutely necessary that the courses should be intimately united with each other, that all the labours executed by the pupils should be directed towards one and the same end; and in order to insure that the pupils may understand the lessons, in order to assist their understanding, in order to stimulate and develop among them the spirit of invention, it is necessary, in fine, to have daily examinations, problems to resolve, designs to sketch, plans to compare, experiments and manipulations to perform, and all this under constant supervision.

It will undoubtedly be perceived, after this exposition of the ideas which have given rise to the organization of the new school of industry, that it could not be created by one man alone. It was necessary, whether to conceive or to execute it, that the founders and professors, chosen in the age of activity, should be in sufficient number to embrace the vast field of industry; and that all, deeply penetrated with the end and the extent of their labours, should be willing to devote themselves almost entirely to a career which is not yet marked out.

When we consider the numerical importance of the manufacturing class, of the part which it acts in a political point of view in our new institutions, and of its participation in the budget of the state, we are astonished that there is not yet in Europe a school for its particular accommodation. But this astonishment must cease, when we examine more closely what the school of industry ought to be, and the difficulties which the organization of such an establishment presents. After what we have said, these difficulties cannot but seem already great, but they will appear still more so, when we add that the establishment thus formed would be incomplete, if the education of the pupils were not pursued farther under the relations of practice both extended and particular.

For these common studies may be sufficient for those pupils who design to engage in manufactures as capitalists, for those who are to direct simple branches of industry, and, in fine, for those who have followed the courses of the school only as a complement of education; but these studies are insufficient for those who wish to devote themselves to the complicated branches of industry, or who propose to become architects or civil engineers. These must have a complement of theoretical teaching, or a deeper practical instruction in the direction which they are going to follow.

The founders have thought that it was necessary to attach to the school a special instruction, which shall be variable in its duration on account of the end which the pupils propose to themselves. This instruction will take the pupils at leaving the school, and qualify them to enter immediately into practice.

The principal grounds of its organization are as follows; at the end of the two years' studies, the pupils will name the career for which they design themselves. They will be arranged in divisions, and these divisions will be placed under the superintendence of the professor to whom their intention has particular relation. He will make them work during a longer or shorter time, in order to complete their theoretical education, since he will place them in a workshop, in order that they may put their own hands to the work, may become accustomed to practice on an extended scale, and may see for themselves how a fabric is managed, and how workmen are directed.

The pupils who may wish to devote themselves to the art of building, and also to architecture properly so called, will have their attention directed to all the theoretical and practical studies which will be necessary for them, as well in regard to the art as to the science; and pains will be taken to procure for them the opportunity of following step by step the execution of different works.

Those who shall design themselves for civil engineers, will find in the school special courses of the higher mathematics, and will thus receive the complete theoretic instruction of the polytechnic school.

Finally, in order to render at once more complete and more easy the education of the pupils who shall confide themselves to their care, the founders have thought it necessary to place at their disposal the works in which are found collected all the discoveries which concern the practical arts. These works will be lodged in the library, and placed at the disposition of the pupils of the third year; but as discoveries relative to the arts are often found in periodical collections published in foreign languages, the founders have felt the necessity of insuring a translation of them.

For this purpose they have taken the resolution to publish a journal of industry, which shall contain all the researches relative to the arts which make the basis of the instruction of the School, whether these researches have been undertaken by the professors, or have been published in works, or in foreign journals.

The journal of the School will make known, besides, all the remarkable results of its instruction, and will offer to former pupils the means of communicating to the public the fruit of their researches.

II. *Organization of the School.* (Omitted.)

III. *Instruction.*

The instruction of the School is composed of a general instruction and a special instruction.

The general instruction continues for two years.

The system of general instruction is composed of courses; of daily interrogatories; of drawings; of manipulations in chemistry, natural philosophy and mechanics; of instruction in the great auxiliaries of the mechanical or chemical arts; of problems, plans and meetings on separate subjects; of general examinations; and of general meetings.

The courses of the School commence, each year, on the third of November, and end the first of August. From the first of August to the first of September, the pupils are put under general examinations.

The courses are ten in number, viz:

Descriptive geometry;
Practical natural philosophy;

Practical mechanics ;
 General chemistry and chemical arts ;
 Analytical chemistry ;
 Working of mines ;
 Practical natural history ;
 Art of building ;
 Statistics and political economy ;
 Design.

The daily interrogatories are made by the professors, the adjunct professors, and the temporary tutors attached to the School. Notes are required to be kept and placed in deposit, where they are made the basis of the classification of the pupils at the interrogatories. This classification is determined by lot, and so managed that chance has too much influence over the order in which the pupils shall be called upon, to admit the possibility of any foresight in this respect. In this manner the pupils are continually liable to examination upon all the branches of instruction ; and, by consequence, if they wish to obtain good marks, they must keep fresh the current of their studies, in all the courses.

The results of these daily examinations have the highest influence on the distribution of the diploma.

The drawings are composed of plans made with the dividers and scale, and of outlines sketched by the hand and labelled, relative to all the courses. All the pupils are required to execute the whole of the designs.

The drawings of each course are daily verified by the professors or tutors. An extreme importance is attached to these exercises, which are designed to bring forth in a tangible form the positive results of all the courses. Also the pupils will not be able to remain at the School only as they fulfil on this subject all the obligations imposed on them.

What has been said of the drawings is to be repeated in regard to manipulations. They will be sufficiently numerous to give to the pupils positive notions of chemistry. The laboratories designed for manipulations and experiments are spacious, and a hundred and fifty pupils can labour in them at a time. Each division will manipulate once or twice a week in the laboratories, and besides will perform all the experiments in natural philosophy and mechanics, which shall be judged necessary in each course by the professors.

In fine, there will be placed at the disposal of the pupils all the materials necessary for the construction of large works of art of whatever description. They will establish them themselves after designs which shall be given them. They will put them in operation themselves, so as to learn from experience a precise idea of the operations executed on a large scale.

In order to render the system of instruction complete, to the preceding elements have been added problems to resolve during the first year. From the commencement of the second, there will be laid every month before the meetings, plans by degrees more and more complicated, which will familiarize the pupils, at first, with the details of mechanical constructions, and afterwards, with the mutual dispositions which are the most suitable in every class of establishments.

In order to give to these works a positive character, there will be placed before the pupils the parts of various machines taken to pieces.

They will be set at work to put them together, and sometimes to calculate the dimensions of one or more of the parts of the machine, in order to modify the system. The elements of the machine, calculated by the pupils, will be executed under their inspection, by the workmen attached to the establishment; and when the instrument shall be put in a state to operate, the pupils will submit it to the examination of the professors.

Independently of the interrogatories made during the courses, whether by the professors or by the tutors, the pupils will undergo, at the end of each scholastic year, general examinations upon all the branches of instruction.

The results of these examinations, combined with those of the examinations which take place in the course of the year, and also with the notes taken during the manipulations and experiments, those which belong to each design executed by the pupil, those which accompany the pieces presented at the meetings, and, in fine, those which regard the conduct of the pupil, form a whole, from which the council of studies will decide upon the promotion of the pupils from the second division to the first, and upon the fitness of the pupils of the first division to receive diplomas of capability.

Every pupil, who shall offer himself to the chances of examination, will be retained or dismissed, if he belongs to the second division; and if to the first, he will receive his diploma of capability, or will depart without any certificate of capability, or even of his connexion with the School.

Pupils, who, with the consent of their parents or guardians, shall declare, before the examination, that they intend to pass two years in the same division, will be admitted to that favor. In this case they will not be examined. Pupils who thus double their time, will be exercised upon questions not comprised in the ordinary courses. Their stay in the school can in no case exceed four years.

The founders of the School have wished that distinguished pupils may receive their instruction almost gratuitously. They think that this end is attained by the institution of numerous half-pays, by the appointments placed at the disposal of the heads of studies, and finally by the rewards granted to the authors of the best projects at the time of the general meeting which terminates the studies. This meeting takes place at the end of the second year. The pupils will be required to make a detailed project of some establishment. The pieces submitted at the meeting will be examined by the council of studies, and definitively classed by the council of improvement.

The author of the best project will receive a gold medal worth 600 francs.

The authors of the second and third, will receive each a gold medal of the value of 300 francs.

These three projects will be printed and published at the expense of the establishment.

The plans and memoirs will be deposited in the archives of the School.

The special instruction is reserved for the pupils judged fit to receive the diploma and who shall wish to profit by the means of instruction which the School possesses, whether to become civil engineers, or to investigate any particular branch, or to continue general studies so as to

qualify themselves for becoming instructors. They will no longer be obliged to follow the courses relative to the general studies ; but may do so, either wholly, or in part. Generally, the pupils will then be placed under the special direction of the professor of the branch which they wish to pursue. He will afford them daily conferences, to point out to them a plan of operations, to follow their progress, and to designate the portions of the course it would be useful for them to pursue anew. These will find moreover special advice from all the professors, as they may experience its necessity. Courses of the higher mathematics will be established, and followed by all the pupils who intend to become civil engineers. They will thus acquire all the theoretical instruction of the polytechnic school.

Pupils who are intended either for teaching practical chemistry, or for carrying on a chemical or metallurgical art, will receive during this third year special and thorough lessons upon the most difficult parts of general chemistry, or upon the theory and practice of the art which they intend to carry on. Both will be exercised in analyses of precision. The latter will be able besides to devote themselves to the preparation of the products which they are going to fabricate hereafter, and will find in this establishment all that is necessary to the fabrication of chemical products, to that of colours, to the art of dying, to the fabrication of painted cloths and papers, to bleaching, to the manufacture of paper, to that of sugar, of starch, and of alcohol, to the preparation of fat substances, and to that of soap. They will also have all the means necessary for perfecting themselves in assaying, as well by the dry as the humid way, the workable ores, and the earths which serve for the fabrication of the various species of pottery. Such arrangements will be made that the pupils may acquire a complete knowledge of the labours relative to the treatment of iron, lead, copper, zinc, pewter, &c.

Those who are intended for particular branches of mechanics will be occupied with all the details of construction, of forces, and of machine tools, in the study and the workshops of construction. They will be introduced into factories, in order to study there the machines in motion ; and those who shall wish to devote themselves to the art of building, or to architecture properly so called, will find numerous opportunities of following out works of architecture analogous to their intended direction.

NOTICES.

Works in the Department of Education.

The Life and Voyages of Christopher Columbus, by Washington Irving. (Abridged by the same.) New-York. G. & C. & H. Carvill. 1829. 12mo. pp. 311.

We welcome this book to American schools. Its subject entitles it to extensive use as a class book in history; and its style renders it an excellent volume for reading lessons. The information it conveys gives it a high place among useful works; while the incidents, the characters, and the scenery, to which it introduces the mind, have, in a peculiar degree, the attractive interest of romance, and a happy influence on the imagination. It is such a book as our youth generally ought to read, as a first volume of American history; and it is one which, we hope, will take the place of not a few of those well meant but insipid tales with which our juvenile libraries are crowded.

Mr Irving has, in the production of this volume, rendered himself a lasting benefactor to the youth of his country, by the historical instruction and the mental recreation he has afforded them. We speak in warm terms of the work, because we have, we may say, tried it in anticipation, by the regular use of the larger work as a school book, and by the observation of its excellent influence on the minds of the young, as well as its peculiar adaptation to the purposes of reading.

There are, however, other reasons of a more general nature, why we value this book. It is, we should say, of the right length for schools. It goes fully into its subject, without being tedious from unnecessary detail; and it avoids the great fault of most class books in history,—that of becoming a dry and scanty abstract, possessing no interest for the youthful mind. In regard to the character of the work as an abridgment we do not feel called on to speak. For the task of condensing the author possesses distinguished advantages in his intimate knowledge of the subject, and in the simplicity and fluent suavity of his style.

In a new edition, (we would have said, but that we observe the book is stereotyped,) a more rigid revision of phraseology would be desirable,—especially when the work is considered as one which will probably be in very general use.

We may select, in proof, a few instances of obvious inadvertency—‘it is evident that the nature of their communications

were generally unfavourable to the admiral.' p. 228—'and what seemed to *lay* (!) equally near his heart.' p. 296—'what visions of glory would have *broke* upon his mind.' p. 310—'The followers of Roldan brought with them a number of slaves, some of *which* Columbus had been compelled to grant them,' &c. p. 226.

The printing of the word Indian, even when it is an adjective, with a small initial letter, (*indian*,) is not in better taste than the word English or American would be, if divested of the capital. Of small matters like these we should not think it worth while to speak, were it not for the tacit influence which they exert on the habits of the young.

A Natural History of the most remarkable Birds, Fishes, Serpents, Reptiles, and Insects. By Mrs Mary Trimmer. With 200 Engravings. Abridged and improved. Particularly designed for Youth in the United States, and suited to the use of Schools. Boston. S. G. Goodrich & Co. 1829. 18mo. pp. 233.

The uncommon neatness and beauty of the cuts in Mrs Trimmer's work seem to make it a universal favourite with young children; although the style of the writer is not always intelligible to such a class of *students*—for we can hardly call them *readers*. In the American edition, the attraction of the engravings is well kept up; and care has been taken to introduce animals likely to fall under the notice of children in this country. Questions are annexed for the convenience of using the volume in classes at school; and no pains seem to have been spared to render the work interesting and useful.

The superior style of the illustrations alone is an excellent recommendation of this book; as in too many publications of this sort, the engravings are so incorrect and clumsy that their bad influence on taste renders them quite unsuitable for the use of children.

Conversations on the Animal Economy; designed for the instruction of Youth, and for the perusal of general readers. By Isaac Ray, M. D. Portland. Shirley & Hyde. 1829. 12mo. pp. 242.

This modest volume conveys a great deal of useful and entertaining information. The style is plain and familiar, yet attractive and interesting. The work seems well adapted for Lyceums; and it is, at the same time, well suited to the objects of family reading. We hope it will find its way into schools, and aid in creating an early taste for knowledge in the important branch to which it belongs.

The National Orator, consisting of Selections adapted for Rhetorical Recitation, from the Parliamentary, Forensic, and Pulpit Eloquence of Great Britain and America. Interspersed with extracts from the Poets. Illustrated by Critical and Historical Notes. By Charles Dexter Cleveland. New York. White, Gallaher, & White. 1829. 12mo. pp. 300.

This is a very superior selection, and prepared with judgment and taste. It offers, however, little that is new or peculiar, and contains, perhaps, too little matter that will interest young speakers.

We long to see a book of pieces for speaking in which the present rather than the prospective mental character of the students shall be consulted. Boys must have liberty to speak as boys—not as men; if we would ever see a natural and easy elocution either in early or in mature life.

Natural History of Quadrupeds; with Engravings on a new plan, exhibiting their comparative size; adapted to the capacities of Youth, with authentic Anecdotes illustrating the habits and characters of the Animals; together with Reflections moral and religious. Designed for Sabbath School Libraries, Families, and Common Schools. By J. L. Comstock, M. D. Hartford. D. L. Robinson & Co. 1829.

This work is one which will no doubt be very acceptable to the young; and the more so that such pains have been taken to consult their wants and wishes in the style and size of the illustrations. In infant and elementary schools generally these volumes will be found of great service, in awaking the mind to an early interest in the study of Life,—that peculiar manifestation of creative Wisdom. In Sunday schools themselves they may, we should think, be used with perfect propriety, and to great advantage.

The School Dictionary, Designed for the use of Academies and Common Schools in the United States. By William W. Turner, A. M. Instructor in the American Asylum. Hartford. H. & F. J. Huntington. 1829.

Our readers are not unaware that we have often had occasion to advert to the great deficiencies existing in school dictionaries, from their want of adaptation to the purposes of early instruction, the abstruse terms with which they abound, the unintelligible definitions attached to many words, and the utter absence of any thing like a judicious selection, calculated to meet the capacity or stimulate the advancement of the young mind.

'The object aimed at by the author' of this work 'in executing his design, was, to select, from the English dictionaries, those words which are used in conversation, and which occur in common books, and to define each word in a manner as concise and simple as possible, noting the accent and the part of speech.'

More explanation and illustration in the statement of definitions would be desirable in a work like this. A clear understanding of the actual meaning of a word is much more useful to young persons, than the ability to give,—by memory, perhaps,—a very exact definition.

On the whole, however, this book seems well adapted to the object it proposes, and will probably be very useful in common schools; though we cannot but doubt whether it is the right sort of work for academies, which would seem to require a more copious volume.

The New Speaker, or Exercises in Rhetoric, being a Selection of Speeches, Dialogues, and Poetry, from the most approved American and British Authors; suitable for Declamation. By William B. Fowle, Teacher of the Monitorial School, Boston. Boston. Hilliard, Gray, Little, & Wilkins. 1829.

Of this collection we had occasion to speak when the first edition appeared. At present we need only say that the work is much improved by very extensive alterations and additions. It possesses still more than formerly a character of individual interest in the selections and of vivacity in the language; which is one of its best recommendations, at a time when teachers of elocution are compelled to feel that most volumes of pieces for speaking are but repetitions of the same hackneyed matter.

We are not sure, however, that the taste in which this volume is compiled will be acceptable to all teachers. Rhetorical exercises intended for young minds should sustain a character of mental elevation both in sentiment and expression.

Thoughts on Domestic Education, the Result of Experience. By a Mother, Author of 'Always Happy,' 'Claudine,' 'Hints on the Sources of Happiness,' &c. &c. Boston. Carter & Hendee. 1829. 8vo. pp. 254.

The republication of this valuable work affords us a second opportunity* of inviting the attention of our readers to the subject of which it treats. It is, perhaps, too generally true that American mothers are so absorbed in the routine of domestic duties and cares, as to have but little time left for the most im-

* For first notice of this book see Vol. II. p. 564.

portant of all maternal offices, the guidance of the female mind in childhood and youth. 'The urgency of immediate concerns is too often pleaded as a sufficient reason for devolving, almost entirely, on others, the charge of what a mother, even under the disadvantages of limited time and opportunities, is best fitted to superintend. We do not wish to advance unqualified assertion for general truth; and we shall perhaps be more fully understood when we say that the moral results of education are, in the female sex especially, the most important; and that a mother's relation to her child is such as ensures that deep interest in the individual character of the pupil, and that intimate knowledge of disposition, which are the true springs of success in instruction, if the developement and formation of the whole mind are regarded. We admit farther that some mothers are, owing to various circumstances which cannot be brought under control, hindered from taking a personal part in the business of education. Still, there remains in our community a very numerous class of society, who are wanting neither in time nor means to accomplish most of their rational purposes, as far at least as education is concerned. In the progress of general sentiment, and the still more rapid improvement of education, families situated as we have mentioned are called, no doubt, to make greater efforts for the instruction of daughters; and it is indeed a respectable, or, rather, quite a fashionable thing, to patronize the best female schools. But expenditure is often in this way substituted for personal exertion; and education still remains at a distance too remote from the main interests of human life.

One of the chief wants of education in regard to the female sex, is that of the individual interest of mothers in the instruction of their daughters, or, at least, an enlightened efficient aid proceeding from maternal experience and observation. To supply this want is the object of the *Thoughts on Domestic Education*. The work is of course adapted more immediately to modes of life existing in England. But, after all due deduction on this score, there is a fund of enlightened sentiment and of sound judgment in the contents of this book, which render it a valuable source of instruction regarding female education and maternal duties. It is a work which, we hope, will aid in accomplishing extensive good, by suggesting hints and plans of exertion in the minds of individuals, and by contributing to turn the stream of female influence into that channel in which most of all, it is needed,—the education of woman.

Having repeatedly made extracts of considerable length from the work before us, previous to its republication, we think it unnecessary at present to attempt to justify our high opinion of its merits by extensive quotations. The following passages are

selected from parts of the work not hitherto introduced in our pages.

‘ It has been often declared, that children, for their early reading, prefer tales and stories ; the fact is, they can understand no other ; tales and stories must therefore be provided for them, conveying whatever instruction it is likely can be understood. But certainly every effort should be made to cause children to relish, as soon as possible, books of instruction and information ; indeed the first step of education, is to inspire children with a love of learning, and a desire for information on the principle of its usefulness and agreeableness ; this desire once implanted, and books of instruction would be eagerly demanded, and not sedulously shunned.

‘ But how is this desire to be implanted ? The question is not so difficult of reply as may be deemed ; let parents suggest and exhibit the benefits occurring from knowledge ; this may be done in a variety of ways. Biography offers numerous instances of the happiness and usefulness dispensed by the wise and the learned ; biography is pleasant reading, and therefore, it may be presumed, mothers often resort to it for amusement ; let them select from it whatever may forward their views ; can any one read the lives of Demosthenes, of Aristides, of Alfred, of Reynolds, of Franklin, and a hundred other departed worthies, without meeting with abundant matter to instil the value of improved talents into the minds of children ? If she had no selfish pleasure in reading such histories, could a mother think her time lost in obtaining useful information for her offspring ?

‘ The course of life and daily observation affords no limited number of interesting incidents, to demonstrate the benefits accruing from a well informed mind ; how many neighbours and friends do not we perpetually notice sinking into misery from their own folly, or rising into respectability by their own merit. In the tone of pity, not of satire, should these fallings from happiness be noticed, for never let us risk making the heart hard, in the pursuit of making the head wise ; let us inspire no other sentiment but that of commiseration for the unfortunate ; let children be early led to distinguish between hatred of the crime, and pity of the criminal ; guilt must be always detestable, but a thousand reasons may be urged to excuse the guilty ; and this, without any fear of causing the child to suppose that in his turn, he may commit sin with a prospect of extenuation.

‘ One plain assertion will do this effectually ; that every crime or folly held up to *them* for reprobation, they cannot fall into from *ignorance* of its direful nature, as probably did the erring persons they are therefore bid to pity.

‘ To speak of the merits of the wise and virtuous requires no

such precaution; although on this, as all other subjects, exaggeration should be studiously avoided, not only for the sake of good morals, (as exaggeration, being a departure from truth, is only a form of falsehood,) but because our precepts will not be efficacious unless drawn from just premises. Children are very shrewd in their reflections. If they once detect a mother shaping her story to her moral, they will cease to believe that her moral ever springs from her story.

‘In respect to books of science and general knowledge, a few of the best written may be agreeable to a child after nine years of age, but seldom before. If a parent be desirous that some insight into such knowledge should be earlier gained, she had better read the book herself, and give her children the information if contains in her own words. Much valuable instruction may be thus inculcated in very early life, and if parents are attentive to seize every opportunity of giving useful knowledge, every occasion when curiosity awakens inquiry, and the ductile mind is peculiarly fitted to receive information, it is impossible to say what bounds could be put to the improvement of the youthful mind. Children would not only gain a daily accession of information, but be fitted to understand future instruction—be disposed to desire it.

‘It is hardly possible to give a list of all the books that have been found amusing and instructive to young people. An attempt at such a notice will be found in another part of this volume. But it will be right to suggest, in this place, that the juvenile library should not contain many books; a few, carefully selected, will suffice. Children will hence be compelled to repeated perusal, and more knowledge is gained from the repeated perusal of a few books, than the desultory single reading of numerous volumes.

‘The practice of giving the morning to studious pursuits should be as early as possible confirmed into habit, and girls, who have completed the course of education, should be urged regularly to devote a few hours to useful studies every morning, as soon after breakfast as possible; not only thereby to avoid the risk of interruption, but to give the powers of the mind, undistracted by other claims of duty or of pleasure, to the service of the mind.

‘It is a question whether making memoranda of what is read is beneficial or not. The act of writing it down may indeed assist to fix the desired information in the recollection, but does not the benefit stop there? How seldom is the paper of memoranda looked into? Besides which, when it is written down, it seems unnecessary to load the memory with the passage, so that it is forgotten without effort to retain it. Now, if knowledge is only desirable as far as it is useful, it should be hoarded where it is

most accessible. 'The book of memoranda cannot be always carried about with us, but our memories are unalienable. It were better, then, not to write memoranda, but to fix a few clear recollections in the memory. So much may not be attempted to be recollected, but what is remembered will be remembered clearly, and the information will be always with us ready for use.

'Reading aloud is recommended, as giving the united assistance of the eye and the ear to the memory. But this advantage can only accrue to the reader, and therefore young persons should never be satisfied with hearing a book read, unless it is some slight work, not demanding thought nor deserving recollection. The mother ought always to be present at the readings, and as much as possible assist in explaining difficult passages, and be prompt in commenting judiciously on the sentiments or events portrayed. In reading history, a well informed parent may thus render incalculable benefits, not only in explaining the relation of events to one another, but in leading the young mind to reflect on actions, and comment on characters.

'It has been found highly beneficial to ask a child, after her reading lesson, to describe what she has been reading about; the expectation of this question, induces a closer attention, and thus lays the foundation of a habit of attentive reading. A judicious mother may also gradually lead her pupils to form rational opinions on what they read; at first, some small helps may be given to the young reasoner, but, by degrees, she will acquire fluency in describing events, and an increasing power of reasoning upon them; we may be assured the more we urge children to use their intellectual faculties, the stronger will those faculties become.

'Indeed the best aim of education is to teach children to think for themselves; parents are too apt to save them this exertion, and to think for them; those children who are early thrown on their own mental resources, generally become clever men and women. It would be no difficult matter to guide the thoughts of children imperceptibly to just conclusions; thus, in reading De Foe's admirable story of Robinson Crusoe, the young reader might easily be led into a familiar chat respecting the conduct of its hero, and if himself incapable of pointing out the merits or failings depicted, a consciousness of them could be insensibly awakened in his mind; thus the industry, the ingenuity, the resignation displayed by Crusoe might be noticed and praised.

'Sandford and Merton is a work generally read with earnestness, and offers many incidents and traits for reflection; when Tommy and Harry are lost in the wood, on a cold winter's day, it is natural to observe how superior the sensible clown to his fine gentleman companion, first, in keeping up his spirits, and thereby lessening the mournfulness of their situation, and, secondly,

in having sense to add dry wood to the fire accidentally found ; it were well to add a remark on the advantage that would have accrued to both, had either little boy known how to produce a fire.

‘As childhood passes into youth, a graver strain of reasoning may be indulged, and though memoranda from books are not advised, written remarks of our sentiments upon them are highly desirable ; thus, as soon as a work is perused, let some notice of its contents and of our opinion of them be inserted in a book kept for the purpose ; the more concise these observations the better.’

The Little Philosopher, or the Infant School at Home. No. 1. Boston. 1829. Carter & Hendee. 18mo. pp. 36.

This is the first of a series of books particularly calculated to aid in the important department of maternal instruction. Like Mrs Hamilton’s ‘Questions,’ it consists of interrogatories intended to develope the reasoning powers of the child, and to direct them to such a course of exertion as will readily elicit answers ; but it is suited for children of an earlier age than the ‘Questions ;’ and in the ‘Number’ before us, it is confined entirely to the physical properties of bodies—the first principles of natural philosophy.

The subjects embraced, are ‘Shape, Colour, Hardness and Softness, Weight, Light, Fire, Water, Earth.’

As an example of the manner in which these subjects are presented to the infant understanding, we present the first series of questions on Water.

‘Has water any colour ? Taste ? Smell ?

Is it heavy ?

Where does water come from ? From wells and springs, from brooks and rivers, and from the skies when it rains.

Does it ever become hard ?

What makes it become hard ?

What is it called when it becomes hard ?

Suppose you put some ice in a warm place, what becomes of it ?

What does it turn to ?

Suppose you put some water over the fire, what becomes of it ? It boils and grows less and less, until it has boiled all away.

What does it turn to ? Steam.

What becomes of the steam ? It goes off into the air, and is spread all about. Why do we not see it ? Because it is too thin.

What are the clouds ? They are this water, which has gathered again in the air, so that we can see it.’

To persons of any reflection the utility of a course of fireside instruction, conducted in this manner, must be apparent at a single glance. The importance of cultivating an early habit of attention and investigation concerning the properties of external

objects is incalculably great. It is the characteristic which is almost always mentioned in the biographical notices of great men as having been early displayed by them. We hope the time is not far distant when an ardent curiosity and thirst for physical knowledge shall become as common a trait in children as the love of sport, or that sentiment so universally prevalent among our juvenile friends, *the love of holidays*.

Elements of Geometry, with Practical Applications, for the Use of Schools. By T. Walker, Teacher of Mathematics in the Round Hill School at Northampton, Mass. Boston. Richardson & Lord. 12mo. pp. 104.

We have long earnestly wished for a work of this kind, in which the more important principles of demonstrative geometry might be laid down in a manner adapted to the wants of our high schools and academies. We rejoice therefore at the appearance of this little work, and we have looked it over with eagerness and delight. It seems to us a book, which will do for geometry what Colburn's excellent work has done for algebra—make a science, hitherto vulgarly esteemed dry, and uninteresting, popular among the young of both sexes, and studied with pleasure and advantage by all who aim at possessing an English education, in any degree, finished. We do not say this because we believe the author has made any essential improvement in the science itself. Geometry has remained, in all that is important, nearly the same since the days of Euclid. The utmost, which the most profound modern mathematicians have been able to effect, is to improve the arrangement of the propositions, to add a few new ones, and to call to their aid the formulas of algebra. The works passing under the name of Simson, Playfair and Legendre are nearly perfect in their kind. But they presuppose too much previous knowledge of mathematics, are too abstruse, too large, and too expensive for general use in schools.

What was wanted, therefore, in an important department of elementary education was a book reduced in size and price, simple, and plain in style, full in explanation, avoiding unnecessary technicalities, and explaining the more common and important practical uses of this noble science. Such a work we had been encouraged to expect from one whose elementary works have done more for the developement of the young mind, than those of any other author of our country. But since that has been delayed, and perhaps laid aside, we are gratified in being able to recommend to our readers another which possesses precisely the requisites, we have just mentioned.

It is unnecessary here to speak of the important results to be produced by introducing geometry into all schools of the highest

grade. It is unnecessary to describe the beneficial effect, which the study of the science has on the mind, in sharpening its powers, in imparting accuracy, order, and precision to the reasoning faculty, nor of the grand results to which it leads in astronomy and geography enabling us to measure the heavens and 'mete out the earth;' to calculate distances on the pathless ocean; and to find how far asunder are the tops of distant mountains; to ascertain the heights of the 'everlasting hills,' and the size, elevation, and distance of the passing cloud. We shall hope, therefore, to see this work soon in general use, in the highest classes of schools of both sexes, and shall expect to see it produce important and beneficial results; both as affording an excellent discipline for the mind, and as preparing the scholar in the best and most thorough manner, for a clear knowledge of mechanics, natural philosophy, astronomy, surveying, navigation, and the kindred arts and sciences.

A Practical System of Modern Geography; or a View of the Present State of the World. Simplified and adapted to the capacity of Youth: containing numerous Tables exhibiting the Divisions, Settlement, Population, Extent, Lakes, Canals, and the various Institutions of the United States and Europe; the different forms of Government, Prevailing Religions, the Latitude and Longitude of the principal places on the Globe. Embellished with numerous Engravings of Manners, Customs, &c. Accompanied by a new and improved Atlas. By J. Olney. Second Edition. Hartford. D. F. Robinson & Co. 1829. 18mo. pp. 269.

This work is arranged in the catechetical form, and is, in our opinion, therefore, less fitted to excite thought, and lead to the exercise of judgment, than if it were on a plan not so liable to degenerate into routine, in the actual business of instruction. In other respects the book is well suited to aid in imparting a practical and thorough knowledge of geography, as far as elementary works usually go. It has also several good points peculiar to itself in the arrangement and succession of the lessons.

Books for Children.

The Talisman: a Tale for Boys. Boston. Wait, Greene, & Co. 1829. 18mo. pp. 105.

This tale is a production of one of the ablest writers of fiction in this country. Its design is to cultivate a pure moral taste and to infuse a strength of moral courage into the minds of boys in their school-going days. It is gratifying to see such talents devoted to such a purpose. The story is so interesting and delightful, the style so colloquial and purely English, the charac-

ters so natural, and the whole so perfectly unaffected; that there is no hazard in predicting that it will become a favourite in all academies for boys—a fashionable present from mothers who regard the best and highest interests of their sons.

A Brief Memoir of the Life of Dr Benjamin Franklin. With an Appendix. Compiled for the use of Young Persons. New York. Mahlon Day. 1829. 18mo. pp. 90.

This is an excellent specimen of what might be done in the way of useful publications for the young. Of course such reading is not intended for mere children; as it requires a degree of thought and reflection beyond that attained in childhood. But we know of few books more deserving than this to be found in family libraries, with a view to being read by every member of the domestic circle, who is old enough to understand it.

The Mother and her Children, or Twilight Conversations. By Abigail Mott. New York. Mahlon Day. 1829.

This is another plain and practical little volume, intended chiefly for usefulness, but rendered entertaining and attractive by a judicious selection of subjects and an easy, animated style. This volume is adapted to juvenile capacities, but admits in a peculiar manner of the superintending mind of a mother accompanying those of its young readers in their progress through the whole.

Rhode Island Tales. By a Friend to Youth, of Newport, R. I. New York. Mahlon Day. 1829.

Simple and easy verses for the young are, as yet, one of the rarest things in the 'book' market. Writers of this description of poetry are generally in pursuit of striking imagery, or lofty and abstract morality, very little accommodated to juvenile tastes or to juvenile life. This is a matter of regret; for at no period can poetry be rendered more influential on the mind, than in early childhood. All that children naturally understand and like, is in fact poetry, as far as thought and feeling and imagination are concerned. But grown people are too prone to forget this, and to go in quest of artificial circumstances, and laboured expression, when attempting to write for the mind of childhood.

The little volume mentioned above is a happy exception to the general practice in this respect. It manifests no over ambitious aim in thought or language; and its only fault is that of human life itself, as managed by adults,—viz. that it is sometimes dull and prosaic. This, we think, is the right sort of fault, (if we may use such a phrase,) in books of this order. It leaves the mind unexcited and uninjured, while a single exaggerated metaphor, or affected expression, or overdone description does more harm to the tender mind than can be calculated or expressed.

The Pet Lamb in Rhythm : intended as an innocent exercise for the Memory of Children. New York. Mahlon Day. 1829.

The preface to this miniature volume deserves the attention of mothers and teachers. It is by no means common to meet with a train of original and ingenious thought on the subject of education, in the preface to a toy-book, yet here it occurs; and the matter to which it forms an introduction, is well worthy of it. The whole book makes not only a pleasing story but an excellent exercise for the memory; and the frequent repetition so ingeniously involved in it, would make it a very useful manual for first lessons in reading.

The Infant Library. New York. Mahlon Day. 1829.

This is a neat little volume, formed by binding together two dozen of little toy-books, of the kind usually sold at a cent a-piece. The peculiarity of this selection is that it has been formed with care and attention, and, as seems to us, with much judgment and taste. Instead of the trash usually offered in this form, we have here a little collection of useful and entertaining matter in a great variety of shapes. The publisher who turns mind and capital into such channels, is a true friend to childhood, and deserves well of parents and teachers.

The Child's Library. New York. Mahlon Day. 1829.

This volume differs from the preceding, only in containing matter adapted to older children than are intended in that, and in the size and cost of the book being somewhat greater.

The books now mentioned are portions of a series somewhat similar in design, though not, in our opinion, equally meritorious in all cases. Several of these, however, would have been selected for particular notice, at present, had our limits permitted.

In bringing these humble publications before our readers, an important service, we trust, is done to the interests of domestic education and of infant schools.

In justice to the publisher of these books, and, at the same time, in explanation of the circumstance of a succession of notices confined to the productions of one press, we ought, perhaps, to mention that the interest expressed in these publications had its origin in the accidental falling in with a copy of one of the smallest class of these books, when in search of a work of a different nature. The apparent merit of the little volume led to a desire to peruse the series to which it belonged; and the result was the conviction already expressed, that to assist in attracting notice to the whole, with a view to the selection of the best, would be perhaps a useful service to parental instruction.

AMERICAN JOURNAL OF EDUCATION.

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ART. I.—*The Constitution of Man, considered in Relation to External Objects. By George Combe. Boston. Carter & Hendee. 1829. 12mo. pp. 310.*

IN the preface to the American edition of Mr. Combe's work on the constitution of man, it is remarked that this essay treats of education. This term has within a few years been used in a sense somewhat different from its earlier and more usual acceptance. It is not now limited to what may be acquired at a certain age, and which is supposed to be completed when the time for such acquisitions has passed. It is the business of our whole lives ; the state in which the mind may be at any moment of its being ; and it is continued through all the periods of its existence. Education does not stop ; because the mind does not. It cannot be completed, because a vast and interminable future is before, and every moment of its illimitable progress, is producing its effect upon the mind. It is this effect, it is all the effects which all influences have been producing, which is truly education, and this is the comprehensive and wide sense in which this term is beginning to be understood. The means for this end, it has been said, are various. They are in short every thing which affects the mind. They are all of them more or less directly instrumental in the production of what is termed character, the whole state of the being who has been formed by them. It is this view of the subject which has given to education the strong interest which now attaches to it, and he who has not learnt thus much of its history, is unacquainted alike with

its nature, and the demands of the whole public. The present time is remarkable for the zeal which every where prevails for the instruction of the whole community. This zeal is not confined to place. Wherever the mind is, there is this zeal at work to increase by all sorts of means, the intellectual and moral property of nations. It knows no distinctions of ranks. The lower, and we may say the lowest, are within the reach of its influences, and are pressing upwards to the highest. It cannot be strange if such zeal were sometimes without knowledge. It has been remarked, and wisely, as we think, that the tendency of the present system is to make readers instead of thinkers. That the mind which is systematically submitted to it, is in danger of becoming little more than a highway for other men's thoughts, and the individual may come to feel satisfied with the fact that such thoughts have passed over this road. A more serious objection has been urged to the same system of intellectual forcing. It is urged that it pays but little regard to the great subject of establishing sound principles in the mind, and of developing the best affections of our nature, and is satisfied if it gives knowledge. The knowledge, it is said, is of things, of facts, or supposed facts, and the labour is done when the memory is sufficiently encumbered and loaded with them, to meet the views of the system maker. These are serious objections. They have not been advanced carelessly, and from a mere disposition to find fault. They deserve a careful investigation. We shall in the following article, direct our attention to the following inquiries ; what are the purposes of instruction ; and what are its means.

In answering the first question it may be remarked, that the great purpose of instruction is to awaken and to keep alive and active in the individual the consciousness of his intellectual and moral nature, and to fit him for the production of all the good of which he is capable, and to indicate to him the highest happiness of which he is susceptible. A child uses his mind, and experiences pleasure, in the earliest years of his being ; but he may have passed much of his life, and never have deeply and truly been conscious of the nature within him. He may never have turned the mind inward upon itself, and returned from his inquiry glorying in his spiritual nature, and full of the high purpose of preserving it unsullied by vice, and of carrying it onward in all that is most worthy of it. It might seem that the mind itself, from its own constitution, would necessarily lead the individual into the most direct course for making these discoveries.

But this is not the case. We may use all its powers, and profitably, too, both for ourselves and others, and still escape that knowledge of itself which is the surest means of securing to it the deep consideration it deserves. To become thus conscious of the mind's being is to honor it. It becomes an object of interest whenever it is discovered to us, and an equal object of respect. If we would bring into full operation the benevolent principle, we should begin with teaching this truth. Who in the full conviction of his own intellectual nature, can regard with indifference or contempt a being who possesses the same. It may have been dishonored, and folly or crime, or cold neglect of it, may have almost extinguished it. But while it remains, it has within itself the principle of a new life, and there is that around it, and from which it cannot escape, which is ever ready to minister to its restoration, and to open to it the way of an unbroken progress.

Another purpose of all direct influence upon others, especially in the way of instruction, is to develop the powers of that being which our previous labours have discovered to the individual. The process by which this has been attempted has been by tasking the various powers, with a regard to the order of their natural development. The earliest demands made upon the mind, and which are indirect in the infant, and proceeding from the necessity of the case, are on the memory. A vast deal is learnt at this time, without direct instruction, and the facility with which the amount and variety is learnt, is truly surprising. Direct instruction is made to avail itself of what necessity originally demanded, and the memory for many succeeding years continues to be tasked. It may be that this fact in the early history of the individual comes at length to be a serious obstacle to the true progress of the whole mind. Is it not true that many very distinguished men have been remarkable, in early life, for the little attention they have given to the common objects of instruction, and have been habitually dull in performing their tasks. It would seem that the reflective, the entire powers in such instances, had been originally more energetic than the passive ones; that, in other words, these individuals had been more occupied with their own thoughts than with those of others. Along with the exercise of memory, an improved system of teaching makes demands upon the reflective powers also. This is its most important feature. It should never be lost sight of. There are many ultimate facts, which are either not capable of explanation, or get no new interest from explanation.

These are to be early made the property of the mind ; upon all others the mind should be habitually and strongly exerted. It is man's prerogative that he can think. That he can dwell upon, and derive intense delight from the invisible, from that of which the senses can take no note. His own nature, and all its unseen, internal endowments,—the mighty principles which are in active energy around him,—the supreme intelligence of the universe,—the past, with its treasures of thought, and all its imperishable remains,—the present, with its ceaseless action, its designs, and its accomplishments,—the future, with its uncertainty and its promise,—every thing in the wide universe addresses itself to the mind, and calls earnestly upon it to put forth all its powers, and to make all being its possession.

Thirdly. Another and great purpose of this revelation to the individual of the mind's being, and of the powers with which it has been endowed, should be the development, and confirmation of principles. The rule of action in the things of the material physical world are fixed in them, and inhere in their very constitution. They are invariable in their agency as it regards the individual thing, and the thing itself only becomes changed by the direct agency of something external to itself. This is in no sense the case with man. He acts from within upon what surrounds him, and after a manner which he may himself control. He may be quiescent, however powerful the motive which may present. He may be active in the seeming absence of all external or foreign motive. He acts differently under the same circumstances ; and after the same manner under the different. He is, in a most important sense, an independent being, and this it is which is his glory and his danger. But with this are associated other principles, and these are so related to the will, that this may receive the wisest and best direction, and all its promptings be for individual and general good. Thus it is that in a constitution which is more complicated than any thing else in the universe to which our knowledge extends, the utmost harmony may prevail. A power infinitely varied, or diverse powers, are susceptible, by their very constitution, of a direction which shall result in absolute good. There is, however, no such spontaneous and undeviating movement to good, that it shall always be sought for and loved ; and it is the great purpose of education by all its influences to secure to the mind this direction of all its powers. We look for this in the establishment of principles, which shall become rules of action, and however acquired, naturally incline and lead the individual to

what is most worthy his highest nature. We may waste the time of the young upon books,—we may store their minds with things, their names and their properties,—we may continue our discipline by the prevailing doctrines and character of the time into mature life, and have for our portion, mourning over the feebleness of public virtue, and the rareness of individual greatness. The ancients in this had the advantage of the moderns. They found a deep principle of *emulation* in the human mind, and this they addressed with a success which has not since been even dreamed of. In the ancient gymnasium this principle was never for a moment lost sight of, and its nature as well as agency would almost seem to have been different from what it has been since. The effort and performance of the individual, we speak of bodily exercises, were never for a moment allowed to rest in himself. He was not great because he had done all that his mind and body enabled him to do, but also because he had accomplished more than another and all others. The comparison he instituted was not so much of himself with himself, as with the whole of human power, however and wherever exhibited. The effect of the ancient gymnasium upon the scholar was truly astonishing. It was discovered in the power of concentrating the whole will upon that which his own mind prompted, or which was suggested by another. His body, especially in regard to its muscular powers, and to their utmost extent, was a matter about which he acquired a perfect knowledge. He knew that the organs of motion in his frame were capable of producing a certain effect, and he produced it at once. He did not wait to doubt of the height or the distance. His light and powerful frame was impelled by the will at once, as soon as the purpose of the action was presented to his mind. There was no calculation of the risk to life or limb, and there was no injury sustained. Such was one effect of the development of a single principle of our nature. Had we time we might speak of other products of the Grecian education. We might speak of the language of Greece,—‘so simple in its analogy, of such complex art in its composition and inflexion, and of such singular sweetness, variety, harmony, and majesty in its sound,’—of the surpassing eloquence, the divine poetry of the same people. Their arts, too, painting and sculpture too might be enumerated. The arts were carried to a perfection only equalled by their language, and like that have descended to us for admiration, not rivalry. The preservation of the works of art of this people is one of the most welcome and interesting facts

in human history. There is now nothing fabulous in the story of the exquisite beauty, and surpassing majesty which the human mind has created, and always has understood and loved. A permanent visible form was given in these works, to those internal spiritual forms, which the mind has received from its author, and which it was a purpose in the fabric of nature about us to develop in all their powers. The painting or statue is a representation of a moral or ideal state. It was the mind of the artist which was transferred to inanimate substances, and the beholder felt, that by a mere act of vision he was made wholly acquainted with the mysterious operations of another mind. It was with the beauty of the external human form, developed under circumstances of climate, habits of life, and the moral and physical discipline of the gymnasium, that the artist felt an intellectual correspondence; and his statue or his painting was a sublime generalization of the individual perfection he was allowed every where to contemplate. His labours were the delight of all, and if Socrates found a willing and intelligent audience in the workshop of the mechanic, while he discoursed of philosophy, so did Zeuxis and Praxitiles appeal as successfully to the multitude, when Iphigenia, at the altar of sacrifice, glowed from the canvass of the one, and majesty and beauty lived in the marble of the other. We owe much to this reverence, this love of the great in the arts, which a mere populace could feel and act from. We owe to it much of our veneration for antiquity, much of our knowledge of what the mind then accomplished in one direction, for it was among the means of preserving to us some of its greatest achievements.

Such was the education of ancient Greece, and such were some of its effects; at least they existed together. Some attempt has been made in this country to introduce into schools a portion at least of the physical discipline of the gymnasium, and with a view to the growth of the mind, as well as to give tone to the body. As far as our knowledge goes of this subject the attempt has not been a successful one. We have talked with the boys from some schools where most has been attempted in this way. But we have learnt from none of them of any marked success. At first much has been done, but the effort has soon been relaxed, and at length laid aside. We all know the result of an experiment in this city, which was begun with much zeal, and at no little cost, but the time and the money were alike both sacrificed. We have been led into these remarks from a conviction of the importance of the subject.

There is another consideration which though, by the way, seems to us important enough to warrant this allusion to the ancient education. We believe that in a character thus formed the deepest principles will have place, and exert an habitual influence. If we would have a powerful and useful mind we must make for it a fitting dwelling place, a sound body. Of how little worth comparatively is true moral courage, if the body, which it might make subservient to some of its purposes, and of good too, be infirm and decayed. Our scholars, at least in this part of the country, have been almost proverbially short-lived. An early grave covers some of our most gifted men, and this mortality in many, if not all these instances, has been traced to a sacrifice of the body to intellectual labour. And how are we to prevent such evil, or rather how may the whole purposes of the gymnasium, of education itself, be obtained here. We must appeal to the same principle which the Greeks addressed with so much success. The appeal will be an enlightened one, and should be carried no farther than to give the young a deep and lasting interest in the system. Discipline should be as exact in its requirements in one department of the gymnasium as in the other. We have no doubt that a school which combined all the means of physical and intellectual health and progress, would very soon become the most crowded, and at the same time beyond all comparison the most useful.

Had we not already devoted so much of this article to a general view of the purposes of instruction, we should willingly enter into a more detailed investigation of the subject. We should have insisted on the importance of laying deeply in the character by early discipline, the principle of enlightened, rational, *obedience*. If we would teach self control, its first lesson must be found in a wise discipline. The whole experience of life is one vast system of influences. Much of all this is beyond our control at any and every period of life. In youth it is more direct, and if we may so say, more artificial than at any other time. It must have an agency in the formation of the future character. It should be wise, then, such as the mind may usefully yield to, though it may not be able to understand it. And to this it *must* yield. If it be trusted to its own imperfect views, to its own uncontrolled passions, there is ruin in its path, and unutterable misery for all connected with it. Again, we would have asked if the present age be not wanting in that respect for superiors, for parents, and instructors,

which prevailed in the preceding. We do not allude to domestic tyranny, which has been as destructive, or more so than the opposite error of overweening indulgence. But we would have asked if the sentiment of respect, of deference to those above us, has not been impaired by our system of domestic and school discipline, and that at least one form of benevolence, courtesy, with its kindred in the young, modesty, is less valued and called forth than formerly. Is not the age trifling and superficial; and if so, is not much of this character to be ascribed to the early manhood of our children, and the unwise importance that is given to the least valuable of their earlier attainments? We think these questions are pertinent. A country's history is to be looked for in that of its children. If these are wronged by our systems the evil will be alike upon us and upon them. No system can be perfect which has not within it the means of calling forth and nourishing the affections. Let a child feel that you are the direct agent of good to him, and that your whole discipline of him is for good, and his obedience and gratitude, or love, are almost necessary results. In the progress of his mind, the true nature of this agency will be taught and learnt. The transition from gratitude and submission to a father or friend, to the supreme parent, will be easy and direct, and we may have almost without an effort planted deeply in the mind and heart, the sure means of a present and a future felicity.

It remains to speak of the means of education. We have said that no subject is more interesting than education in the extent in which we have used this term. We can hardly make it too comprehensive. In its means, we have said, are embraced all the direct, and all the indirect influences which communities with all their institutions, and individuals with all that may be personal to them, can exert on the mind. It begins with the first consciousness of the infant of the things and beings around him, and it goes on without a moment's interruption till that consciousness ceases in death. Whatever affects the mind, however remote, or however near, is contributing to that result which we term education. It is now public opinion, when it prescribes its plans for the multitude, and without advertent to such a result, produces a common level in moral and intellectual attainments; and it is now the dogmatism of the individual, which provides for a success of which it may comprehend the amount, but considers a provision for a greater, a matter of very questionable experiment.

Some very interesting views have been recently taken of the subject, and which it cannot be too ardently hoped will at length come universally to prevail. Education has been considered in regard to the state of the mind, the capacities it may give it of remoter and greater acquisitions ; and has been less valued for the amount of particular knowledge it may yield, —a store of what, if we so express it, is external to itself, and much or the whole of which, may be lost in new acquisitions, or retained without contributing any absolute strength to the intellect which it burdens.

The modes of communicating knowledge to the young, (and here we include the means), or of meeting in the best manner the increasing vigour of the intellect at this age, are receiving a portion of the regard which the subject demands ; and the question is gradually becoming the main one, how shall we meet the demand in such a manner as will most surely secure a continuous and perpetual progress of the mind ? This inquiry with different men has ended differently. With some it is believed that a perpetual demand, should be made upon the mind, or that most of the working hours of early life should be spent in a school, or in a preparation for one. Upon some children the experiment is successful ; the native elasticity of childhood overcoming the tendency of long continued pressure to depress the powers of both body and mind, and rapid progress is made. With others, and it is believed with many, the effect of this system is different from all this. Listlessness becomes a habit of the individual, much indifference about success or failure ; or a disposition to be satisfied with the mere accomplishment of the prescribed task, and for the sake of finishing it, rather than to find in the success an incitement for fresh and more vigorous effort.

With others, the amount learnt is a matter of comparatively slight moment. A few hours only are devoted to school, and the intervals are in no measure occupied by study. The mind at these intervals is entirely relieved from an artificial and prescribed use of its powers. The body is now active, ministering in its ceaseless motion to the happiness of the individual, and securing perfect development, and all desirable vigour. The mind is not inactive in such moments as these. The play of a child is an intellectual occupation. All its powers, or all which have come into activity, are concerned in this bright and joyous occupation. A perpetual succession of what will for its hour satisfy goes on, and we feel assured that in such a system,

where the apparatus of motion, and the spring and principle of its movements are equally active, and equally perfect, that the progress and changes of time will be approximations to the perfection of the compound being we contemplate. It is foreign to our purpose to indicate any precise course of study for the young, but there would seem to be good reason to have some regard to the individual as far as the circumstances of the case will allow. There are intellectual as well as moral propensities, and where any one is sufficiently prominent to be distinguished among all others, some special regard may be very usefully had to this in the course to which the individual may be submitted. If phrenology, the science from which Mr. Combe looks for so much in ascertaining particular biasses, come to be applied and acted upon as he believes it will, much may be discovered to aid in this very difficult task of adapting individual discipline to individual peculiarities. In the mean time, the fact that they exist, and may be discovered, should not be lost sight of, and a wise instructor may do much with the knowledge he may acquire concerning them.

Beside the age and individual propensities, some regard should perhaps be had to the situation of individuals in the direction to be given to their minds and studies. In this country, where distinctions are more nominal, at least than in Europe, it is not strange that it has received so little attention. There is a natural adjustment here of means of instruction to situation in places remote from capitals, and he who wants more than what the average local provision supplies, and has sufficient means, may find it elsewhere. In cities, in many at least, the various classes have a common property in the means of education, for they are defrayed by a public or general assessment, and all equally enjoy them. No practical inconvenience, we believe, has yet resulted from this arrangement, in this country. Remarkable endowment attracts attention to its possessor, and if he want the means of wider intellectual advantage these may not be denied him. The practical disadvantage of our system can only be found in its rendering the labouring classes less able or willing to discharge the relative duties of life, and which duties it is the chief business of education to teach and prepare for. We are not disposed to think that this has been to any important degree its effect. In Europe, at least in England, this topic has excited some discussion. In this connexion the Quarterly Review has the following. 'It will, in all likelihood, become manifest ere long, that the labouring classes,

will not permanently devote a large proportion of their leisure time to the acquisition of knowledge, either by means of reading or any other sort of application. Novelty and variety give a temporary impulse, and the curiosity which is natural to man may prolong the exertion ; but in no age or country can a large proportion of those whose lot it is to earn their bread by the sweat of their brows, be prevailed upon regularly to begin intellectual exertion when their daily task is ended. The body then requires repose ; and domestic concerns demand attention ; and if the few hours which remain are applied to that which with all men ought to be the chief concern, the improvement of the heart, it would probably be found the surest means of advancing the improvement of the head also. If mechanics and labourers could be persuaded to make a study of the Bible, it would be found to convey more useful knowledge, for this world as well as the next, than all the volumes and lectures which are likely to be prepared for their edification.* These remarks are not made from any hostility in the reviewer to the instruction of any order in society. We have not introduced them for application here, but because they bring so distinctly into view the paramount importance of religious instruction ; such let it be observed as the *study of the Bible* may afford. We would not confine the commendation of this study to any one class of men. It belongs equally and alike to all. Its faithful study has a claim upon us as intellectual and moral beings. It reveals the internal, the spiritual nature of man, we had almost said, with the distinctness of vision. It teaches what are its powers, and what are the purposes in its creation. It reveals immortality and the bliss which belongs to it. It addresses itself especially to that sublime principle within us, faith ; and shows how appropriate are its objects to the principle itself. It finally, in its instructions, meets the great purposes of all education, and to which we have given a distinct place in our remarks, the establishment of the surest principles for the whole conduct of life.

We have been led into these remarks from an examination of Mr. Combe's work. We have placed it at the head of this article not to analyze, but to recommend it. It treats of the constitution of man in its relation to external things. He first shows what the constitution of things is, and the laws of their being and action. These are shown in a great variety of

* April, 1829. pp. 494--495.

striking particulars. The physical, the organic ; the moral and intellectual constitution of man are next treated of, and the precise relations of these to each other, and to external things, very carefully traced. This is done by a detailed account of the correspondences among all this variety of being, especially as it regards the laws by which they are severally governed. We have in the next place, very amply discoursed, what the effect must be, and actually is, of an infringement of these laws ; and what a strict obedience to them necessarily produces. In the one case the individual must be miserable, and in an exact proportion to the amount in which the law or laws have been violated. Implicit obedience, as far as the relations treated of are concerned, has its reward in the enjoyment which necessarily attends it. The whole system of things is shown to be one of perfect benevolence, and punishment is no less so both in its necessity and its consequences than is reward. The contrivances in nature for promoting human happiness, and the adaptation of the constitution of man in all its variety for the full operation of all these means of good, are treated with great force and beauty. The author has secured to himself the interest of his reader by the clearness with which he presents his subject, and especially by the variety and felicity of his illustrations. It will teach every one much that it concerns him greatly to know. The instructor of the young, and the advanced scholar must acknowledge their obligations to Mr. Combe for the important knowledge his work contains. We close by recommending it to the whole community.

ART. II.—1. *Letters written in the Interior of Cuba, between the Mountains of Arcana to the East, and of Cusco to the West, in the Months of February, March, April, and May, 1828. By the late Rev. Abiel Abbot, D. D. Pastor of the First Church in Bererly, in Massachusetts. Boston. Bowles & Dearborn. 1829. 8vo. pp. 256.*

2. *Sketches of Naval Life, with notices of Men, Manners, and Scenery, on the Shores of the Mediterranean, in a Series of Letters from the Brandywine and Constitution Frigates. By a Civilian. New Haven. Hezekiah Howe. 1829. 2 Vols. 12mo. pp. 570.*

IN pursuance of the design, mentioned in the introduction to the present volume of the Journal, of discussing those things

which form the *subjects* of education, we now enter upon a review of that large class of works which profess to describe foreign countries from actual observation. Books of this description claim and receive considerable attention in early life, and contribute not only to the mass of geographical knowledge which a young person acquires in the process of education ; but to the far more important object of liberalizing the mind, by the removal of national and local prejudices and the infusion of that humane and philosophical spirit which travel itself is so eminently fitted to produce.

To say merely that a youth must read travels in order to understand something of the condition of foreign countries—must apply to original sources of information, instead of resting content with his ‘Geography,’ and ‘Manners and Customs,’ is not enough. It is turning him into a wilderness of books, good, bad, and indifferent ; and referring him to teachers who are influenced by almost every variety of motives, and furnished with every kind of qualification or disqualification for the office. There is no class of books in which judicious selection is more important than in that which embraces travels, voyages, and descriptions of scenery, society, and manners. To aid those who have the care of youth, in the selection of such works of this kind, as may with perfect safety and propriety be recommended, for the purpose of storing the mind and forming the spirit and character, will be a primary object in this part of our undertaking.

The books before us relating to countries widely remote from each other, and written by authors in widely different circumstances, are alike in one most essential point. They are both written by men actuated by christian principles and that spirit of liberal philanthropy, which should always characterize the traveller ; and much more the writer of travels.

Doctor Abbot visited Cuba in the winter and spring of 1828, for the sake of its salubrious climate, which is so peculiarly efficient in restoring the health of persons afflicted with pulmonary complaints. His opportunities for observing the features of the country and the state of society were ample, and his admirable talents for observation and description have given us a picture of Cuba as accurate and graphical as it is interesting. Nothing seems to have escaped his quick and scrutinizing eye. He gives us not only the grand features of each scene, but the minuter parts, not only the ‘magnificently great,’ as Dr. Johnson would say, but the ‘elegantly little ;’ not only the form and costume of these interesting islanders, but their finer traits

and fleeting expression ; the free and easy air of the *Montero*, and the nameless grace which characterizes the Cuban female, from the belle who moves in the proud circles of Havana to the humblest cottager among the *Camarioca* hills. The country of which he has presented so lively a picture is deserving of notice among us ; and on account of its proximity and growing commercial importance it is particularly so to the rising generation.

Cuba is undoubtedly the most important and interesting island of the Western Archipelago ; important not less on account of its salubrity and fertility than its size and its numerous white population ; and, from the character of its scenery and inhabitants, not less interesting to the attentive observer of men and things, than to the politician or commercial speculator.

The principal part of the white population of the other West India islands consists of adventurers, who resort to them for a temporary residence to accumulate property which they propose to spend at home. In Cuba the case is widely different. The white inhabitants of the islands, who, by the way, are more numerous than those of all the other islands, are mostly natives of the country. Their ancestors were born there ; the estates of the great proprietors and the titles of the resident nobility,* have long been transmitted through their families, and the mass of the people have, by the lapse of time, acquired a sort of national character of their own, in which the love of country is by no means the least prominent trait.

Among the higher classes there are many of the descendants of the most illustrious men of the parent country ; and the traveller is continually recognizing names here which have graced the brightest epochs of Spanish history. The early adventurers to the western world often fixed themselves in this island, the scene of many of their enterprizes, and here their descendants have remained to the present day. Those who in subsequent periods have come to the island from Spain for the purpose of acquiring property by agriculture or commerce have almost always remained ; prevented from returning, no doubt, by the consideration that the same wealth which would give them importance and respectability here, would by no means entitle them to rank with the ancient gentry, the high spirited *hidalgos* of the mother country.

A similar motive has influenced many foreigners to fix them-

* There are twenty nine resident nobility in Cuba, many of whom have never seen Spain.

selves permanently in the country. When to these circumstances we add that a great number of the white inhabitants of the neighbouring island of Hispaniola, took refuge here after the insurrection which drove them from their home, we shall be at no loss to determine why so large a proportion of the population is white.

We should remark, in passing, however, that it is by no means an easy matter for us to come at the precise relative proportion of blacks and whites in the island; or, what may seem strange to us, for the government of Cuba itself to form any correct estimate of the number of inhabitants, the amount of produce, or any other general statistical fact relating to the island. This arises from an unwillingness on the part of the inhabitants to make full returns; as they are very well aware that such returns are never sought but for the purpose of raising a revenue by direct taxation; and moreover that they themselves are to have no voice in determining the objects or amount of this taxation. A planter, therefore, instead of returning the true number of his slaves, returns half, a third, or even a tenth; and follows a similar rule in reporting to the government of the *siempre fiel isla*, the amount of sugar, coffee, or tobacco, produced on his estate.

This uncertainty extends even to the amount of imports and exports; for it is a literal fact that on inquiry being made, by certain commissioners of the government, concerning the amount of flour, sent from Matanzas to Havana, in a year, it was found to be greater than the total amount entered from abroad at the custom-house of Matanzas; so that, since none is produced in Cuba, an amount greater than all which was consumed during the year in the large city of Matanzas and the surrounding estates and villages must have been smuggled into that port. Again, when a board of commissioners, appointed by the government, attempted to learn the whole amount of products of the island and had brought in their returns, it was found on comparing them with the custom-house books at Havana, that the conscientious planters had returned a smaller amount of sugar for the whole island than is annually exported from the single port of Havana.

For the present, therefore, the statistics of Cuba must be left to conjecture. But the statistics of a country are certainly not its most interesting features. Its moral and intellectual aspect, the adaptation of its scenery and society to affect the mind and heart—these claim our first and highest regard. In point of

actual personal intercourse, it is probable that Cuba has much more to do with this country than Scotland. But which is most intimately known to us? Who will think of comparing the influence exerted over us by the Cubanos to that which we daily feel to be exerted by the Scotch? The former influence is weak because it is commercial only—*material*,—the latter is powerful, because it is moral and intellectual, the intercourse of mind with mind and heart with heart.

It is one of the best characteristics of Doctor Abbot's work, that it makes us acquainted with the moral and intellectual condition of the country he describes. He portrays its scenery, it is true, with all the enthusiasm of an artist, but he does not forget to delineate those higher traits on which its future destiny depends.

The first extract which we shall present, will illustrate this observation.

'The cursory view of the free population of the island, taken in my former letters, would be imperfect, should I not attempt some account of its moral character. They have their virtues; and they have their vices. Of the first I shall speak with unfeigned satisfaction; of the last with regret, and, I hope, with candor, certainly without intentional exaggeration. For though my residence in this island has been short, I have been so absorbed in the subject of my investigation, and my feelings have risen so far towards enthusiasm, that I may almost lay claim to the local passion of patriotism. At least I must be allowed to say that few things could give me a satisfaction so solid or so great as to see their virtues increased a hundred fold, and their vices, deep rooted as they are, entirely eradicated.

'It has been with great pleasure, that I have heard, in all parts of the island, which I have visited, of the *parental authority* and *filial piety* of the Spaniards. In a former letter I mentioned, on the authority of a respectable and intelligent Spaniard of Old Spain who had passed six weeks among them, the patriarchal state in which Monteros live, in a district about fifty leagues to the windward of Matanzas. The case is very similar fifty or sixty leagues to the leeward from the same city. A few anecdotes will best illustrate the point which I give on unquestionable authority, and only at second hand from the Montero himself, whom I have seen again and again.

'Having long been employed by the lady, to whom I refer, as a carter of produce to the market, he sometimes took the liberty of conversing with her on his own affairs; and once mentioned the grief, that had come upon himself and his wife by the gross misconduct of his son, then eighteen years old. "Why, mad-

am," said he, "the rash boy took the liberty the other day of going to the next village, without ever consulting his parents, and purchased a machetta, and brought it home. I can never forgive the shopkeeper for consenting to him. But, I assure you, he was not long in possession of his long blade and silver handle, and Russia leather belt. He got his mother to make *impegnio* for him, that he might not have the shame to carry it back, at least before he had kept it a day or two. But I was deaf, and sent him off at once; and I think he will not be likely to take an important step again, without the advice of his parents."

'The age of majority, according to Spanish laws, I understand is fixed at twentyfive. A youth, married or unmarried, but at any rate in his twentyfifth year, was so undutiful, in some matter of conversation, as to contradict his mother. But she instantly corrected the rudeness by a slap on his cheek, and he retired in confusion to vent his feelings in tears of contrition. The proverbial expression in Spanish denoting a spoiled child, "*consentida*," *a child consented to*,—a child having its will,—is wittily happy, and implies a general sense of the necessity of authority and submission between the parties.

'A youthful Montero, well known in this family, once thought the parental yoke too heavy, and left his father. After one day's absence, he regretted the undutiful step; but dared not return without a mediator. He therefore applied to a person who had great influence with his father, to make *impegnio* for him.

'He readily attempted to bring about a reconciliation. The father complied with his friend's request to receive back his son; but as soon as he was gone, he said to his full grown boy,—“Where did you think you could hide yourself, that I should not find you?” And gave him a correction, which he will never forget.

'Thus strict is the family discipline among the rude Monteros. It wears a gentler aspect in the higher classes of Spanish society. Here, submission and dependence are courteously demanded, and cheerfully rendered. The young members of the family, with affectionate humility, before retiring for the night, kiss the hands of their parents, and ask their benediction. They bestow it in words like these:—“May God make you a saint.”—“May God make you good and happy.” It cannot be denied that the most important relations and duties are recognized in this ceremony of every evening; and that its tendency is to enliven the sentiment of respect and affection between the parties, and to improve the sense of their dependence on the great common Father of parents and of children.

'In this connexion, because probably growing out of this family custom among the Spanish, I mention a kindred custom among

the negroes of their houses and estates—the custom of asking their master's blessing, and of ejaculating a petition for his welfare. You cannot pass a half dozen little Creoles, without hearing their cheerful voices commending you to God ; and the same thing happens in passing the men and women in the field. Whether from my costume they judge me to be a clergyman, and on this account do it, I know not ; but as often as I dismount, a *stranger* before the house of a Spaniard, a servant as he takes the bridle, drops on one knee, and asks my blessing.

'These customs on the part of slaves, which wear an affectionate and religious aspect towards their superiors, it is the soundest policy in masters to encourage, while at the same time it somewhat lightens the yoke of bondage on their necks. They have the pleasure to see, that they are recognized as the humble children of their master ; and though there is a measured and awful distance between them and others, they feel a sentiment of dutiful attachment to the family, and a common interest in its safety and welfare.

'But to return from this digression. To preserve to a late period in life the sentiments of authority and duty, is the tendency of the custom among opulent Spaniards, of settling their married children near them ; and where they can, in the same house. This is one object in those large mansions in Havana, extensive and splendid enough to be denominated palaces. Three or four distinct establishments, or suites of apartments, are found under one roof, occupied by different members of the patriarchal household. Still in some respects they form one family. There are halls for common meetings,—at least for devotion, which is conducted by a chaplain. Something similar occurs among the Monteros, where a father on a few caballerias of land, establishes his married children and grandchildren all around him.

'On this interesting subject I have enlarged, because it presents a very distinctive trait in the Spanish character—a trait for which, in substance, I have a profound respect. As to the means of its being maintained, and the manner of its being expressed, different nations and different individuals of the same nation, may agree to differ. But as to the thing itself, as to the immense importance of family subordination, there can be but one opinion among pious, moral, or reflecting persons. Dutifulness to parents, tends to piety, to God ; submission to domestic authority prepares the members of the family, those thrifty elements of the larger community, to become bright examples of submission to the magistrates, and the laws. And I add, if submission and duty to superiors is not taught and secured in the family, it is probable it may hereafter be necessary for the magistrate to teach it, with a whip of scorpions.

'The war of the revolution served in some degree to lower the

high standard of family discipline in our country; the French revolution gave to it a still heavier shock. The cant and rant of that day was "Liberty and Equality;" and the thing at once penetrated the sanctuary of private life. Parents relaxed their authority, and children, of almost all ages, felt about as old as their parents, were quite as wise, and a little more independent, and a great deal more rude. It was some time before these capital errors were discovered; and it will be much longer before they are fully corrected.

* * *

' A traveller on this interesting island, who passes through considerable districts of the country, or resides in any of the cities, and is a man of observation, cannot fail to be struck with the superior *temperance* of the Spaniards. I refer to temperance in drinking, not particularly to abstemiousness in eating. Their dishes (I speak of the opulent) are almost without number, and prepared with luxurious condiments; and seldom does a dish pass without a judgment upon its merits by the guests, on the evidence arising from *examining the premises*. The simple and nutritious fare of the Monteros is pork and plantain.

' England and America may find a noble example in Cuba of greater caution than they see at home in regard to ardent spirits, cordials, and inflaming wines. It is very rare to witness an example of intemperance in town or country, in Spaniard or white Creole, gentleman or peasant. Healths are drunk sparingly; and toasts very seldom; and the guest is civilly asked, but, I think, never pressed to drink, except by foreigners; and even by them, by the force of good example, they are seldom urged. Fruits and sweet meats in endless variety fill up more harmlessly those moments after dinner, which, in our own country, are often devoted to the history of a dozen of wine, its surprising longevity, its precise merits, and the drinking of it. One of the immediate consequences of this Spanish discretion is, a cheerful party without clamor, sprightly conversation without heat or dissension, and the pleasure of ladies' company to the close of the entertainment—and fine health.

' The Montero is abroad with his wagon or string of mules, in the dews of the night, under tropical and meridian suns, enveloped in clouds of dust, and exhausted with fatigue and sweat; but with thanks often declines a glass of spirit to mix with his water, when hospitably offered by his employer, giving the slight apology that "it is heating." A hardier, healthier, more muscular race of men cannot be found on the mountains of New Hampshire or Vermont.

' How different is the philosophy of many of the yeomanry of New England, so often appealed to as the virtuous progeny of the virtuous pilgrims. God forbid I should affix any stigma to

them as a body. But how great is the number who pour down "the liquid fire of the West Indies," because they are hot, or because they are cold—because they are about to encounter fatigue, or compose themselves to rest—because they are in company, and are ashamed not to be social, or are alone, and must cheer their solitude—or for any other reason, and for no reason at all, till their farms and health are gone, and their families are in shame and beggary, or the care of the town.

'The subtle vice of drinking freely of ardent spirit crept over the community, as it does over an individual, in so insinuating and gradual a manner, that the danger was almost unsuspected till it was instant; and the chains of the habit were not felt before they were riveted. The community is at length awake to the danger: and aware of the difficulty of returning to the better customs of fortyfive years ago. Something has been done; and much remains to be done. It may at least be said that the community is no longer thoughtless on the subject; the temperate are anxious to remain so; and are on their guard against those initiatory customs, which are the footpaths leading to the highway of drunkenness. The pulpit sends forth its awful warnings; the press contributes its aid in tracts and paragraphs; the laws, and magistrates, and municipal officers, do what they can; and, by the blessing of Heaven, it will be strange if in fortyfive years to come we shall not retrace our steps, and be not ashamed to stand compared even with the temperate inhabitants of Cuba.'—pp. 162–163.

The following extract gives us the Doctor's passage up the Canimar river, and his first impressions of the scenery in the interior.

'The tide in the river is but two feet, and in the bay, little more. Our course was instantly walled in by a lofty bank of nature's masonry, sometimes almost perpendicular, and sometimes with a precipitous slope, I conjecture, fifty, seventyfive, and a hundred feet high. But imagine not that these beetling cliffs appeared in dreary, naked majesty, blackening in a tropical sun. From a few feet in the water, to the top of the height, is a matted growth of cane, and brush, and trees, glossy and brilliant with foliage and flowers, not a plant of which but was a stranger to my eyes. Many of the trees were exceedingly beautiful. The red mango tree runs high with a branchy top, and is as gay and thick with flowers, as an apple-tree in a New England spring. The mahawa has something of a catalpa top, trunk and limb, with a gay red flower, on some of the trees, and a yellow flower on others; and what struck me as a curious anomaly, on some trees were seen flowers, some perfectly red, and some perfect-

ly yellow, so growing naturally, and not by inoculation. In crevices of the rocks, you occasionally discover natural beehives, which are found filled with honey, in situations difficult for the human robber to disturb their busy and well ordered commonwealth. The turns in this river are frequent, presenting the most diversified prospects; the bank, now curving into an amphitheatre, and now fluted in the most beautiful swells and hollows, as if the hand of art had been employed. Now you see a little hut of wattled walls and thatched roof, and a narrow bank of a rod or two, flourishing with great beds of salads and cabbages, luxuriant in spite of shade. Here runs into the water a little close fence to wall the pigs from the river, while they enjoy the water, and there a still closer fence, to inclose the fishes, probably at the recess of the scanty tide. A duck came swimming along our passage so fearlessly, that the bargeman might almost have saluted him with his oar, and when so near, dipping only, not flying. His form was different from all the ducks I have seen. Various birds appeared on wing, and perch, and on the water, whose forms, and feathers, and names, were all new to me. But, I must not be minute. We at length, after a delightful passage, in the gray of the morning and early sunrise arrived at the head of our boatable navigation. Here we found a number of stores, and boats for the accommodation of the produce of neighboring plantations. Large quantities of sugar, coffee, and molasses are here deposited and thence floated to Matanzas. In the principal store we reposed a little while, waiting for our equipage, which had not yet arrived. I was struck with the appearance of the different negroes at work, letting bags of coffee down an inclined plane of twelve or fifteen feet to fill a boat. They were generally furnished with trowsers, but their whole contour above the hip, was in an exact state for the study of the painter. I have thought that the negroes in Cuba, if I can so soon judge, are not generally so stout and muscular, as in South Carolina. Some are quite small and short, and some are marked as Africans by their tattooed faces and breasts. In this place, while we were waiting, there arrived three Americans, one of whom recognized me. He was from M——d, a parishioner of our friend the Rev. J. B. and a particular friend, as all his parishioners are. I doubt not he is a fine fellow; he has great fluency of speech, and a great deal of sailor-like frankness and good feeling. He was on his way to see his old townsman Mr K. of whom mention is made in one of your letters. At length we started in our volante, which I will take a future opportunity of describing when I have more time, as it is one of the most singular contrivances for transporting the human frame. On we pushed, with our heavy, easy carriage, with two horses, a blackey astride one of them, and a broadcloth screen

extended from the place where our dasher is, to the top of the vehicle, to protect the passengers from an intense blazing sun. We soon came to plantations, now of coffee, now of sugar. The charms of the prospect at every rood, and the variety, it is out of my power to describe, in what of time and paper is left to me. Carolina in its general appearance is lifeless and dull, compared with almost any spot, since the plantations commenced. You often see a beautiful white stone wall, and sometimes faced, inclosing the plantation from the highway; sometimes a picket fence, withed to a single slab, by a cord cut from the forest, as big as your finger, and drawn as neatly as a cord of hemp; sometimes a living hedge of stakes driven like our willows in a wet place; sometimes a beautiful lime hedge is the fence, and rarely the awkward zigzag Virginia fence, as it is called in the United States, employed as a lively figure to indicate the course of one who sees double. The road is often adorned by a row of those charming and invaluable trees, the palm. These grow to a great height, with a trunk as smooth and polished as if it came from the turner's lathe, from the root to the top, where a few feet of the stem are of a rich, green color, surmounted by a tuft of leaves, which remind you of the plumes adorning the bonnet of a knight of high degree. These often line the broad avenue which leads from the highway to the planter's mansion. They take infinitely more pains to adorn these avenues, than in South Carolina, a few at Goose-Creek excepted. I observed one avenue of lofty bamboos, thickly set, in such a manner as to form a beautiful Gothic arch. For beauty nothing could exceed it, except the live oak. After travelling three or four miles, my friend turned in at his friend's, Mr M.'s, a hospitable German. It seems as if the garden of Eden could not be more beautiful than his grounds. His buildings are handsome, and his house, with piazzas on every side, spacious and airy. Everything around looks like a garden, and borders of wild ipecacuanha, in red blossoms, skirt his walks, and orange trees full of ready fruit, alternating with trees still more ornamental, form his avenues. He was not at home. Mr B. with a liberality freely given, and freely taken, ordered his horses out, and a breakfast, as quick as possible. We had in a few minutes, broiled and fricaseed chickens, and everything else which the heart could wish. Mr B. next ordered two mules to replace his horses, and at this crisis the host arrived to approve with a cordial greeting all that had been done, and all that was to be done. We started on our last stage, and passed many beautiful plantations, which succeed each other, with little or no intermission. The roads for much of the way, are excellent; sometimes the limestone renders it rough; but a lusty rock is encountered often without fear by the sturdy wheel, and without serious inconvenience to the rider, so singularly constructed is the carriage.

' Mr. B.'s place is very delightful. A fine walk, with a row of palm trees fronts his place ; an avenue of the same leads to his new and handsome buildings. These I shall describe hereafter, as also the grounds. A semicircle of beautiful hills at a few miles distance seems to enclose his prospect. This plantation is yet young, and every year is filling up a picture, which any description of mine will fail to present in all its beauties. My welcome so cordial from the host, has been as much so from his lady. Three sweet children are sporting about the floor, and young Mr I. a great invalid, is receiving the same generous hospitality with myself. With a neighboring planter we sat down to a various and excellent dinner, which closed with a dessert of pines and oranges, figs and raisins, plantains and olives, and delicious guava jelly. Such is the rapid sketch of my present situation. I bless God for his mercy by sea and by land ; I rejoice in my removal to a still more auspicious climate, and to a world inexhaustible in novelties. I see nothing old ; all is new. It is, as if I were transferred to a new world—to Jupiter or Saturn, to Venus for beauty, to Mars or Mercury for fervor and glow. It seems like gentle summer, fanned with refreshing gales. My spirits are cheerful and equable, and I know not at present anything that I wish altered, except that my heart may be more grateful to God and man.'—pp. 6–9.

There are some errors in the minute descriptions which Doctor Abbot has given. Indeed it could not be otherwise, for he was frequently obliged to depend on the statements of those who were not so accurate observers as himself, and yet were anxious to appear intelligent.

In the third letter he mentions the *bajuca* affording to the thirsty traveller a sweet milky juice. It would not be wholesome for the thirsty traveller to taste this sweet milky juice. Of the many varieties of *bajuca* or wild vine, there is one which produces a milky looking sap, which, the natives say, is deleterious, if not poisonous. There is another variety, which may be cut as easily as a sugar cane, and the natives are in the habit of cutting off portions of it with their swords, when travelling in the woods ; reversing the piece detached, turning the end, which grows uppermost, down, and drinking the stream of clear, limpid, (*not milky*) sap which runs out. This sap is not sweet, but perfectly insipid and in every respect like water. The writer of this article has tasted it more than once, not without admiration of the excellent contrivance for supplying wholesome drink in forests where a stream is seldom found and a spring would be esteemed a wonderful discovery.

The statement on page 54, in reference to Mr M.'s treatment of his slaves, would lead a common reader into the very erroneous supposition that Mr M. is not a kind master. Now as we know from personal acquaintance, the direct reverse, we are inclined to think that he must have been quizzing the worthy Doctor with his account of the 'two hundred lashes,' the 'wounded back,' &c. There is not a more indulgent master or a kinder hearted man in America than Mr M., nor one who can pass off a capital joke with a graver face.

On page 34 the author, confiding in the statements of some ignorant person, has said, 'Beyond this limit' (that is, the mountain where he stood, and which he calls Hacana in the body of the work and Arcana in the title, the real name being Jacan) 'to the east, the island is a level country about 300 miles, from sea to sea.' The truth is that the mountainous country commences at Villa Clara, which is situated less than one hundred miles to the eastward of the Jacan mountain.

A few trifling errors of this description occur in the work and might easily be corrected, if previous to the publication of the second edition, it were submitted to the intelligent tourist in whose society Dr Abbot lived and travelled a considerable part of the time he was in Cuba.

The 'Sketches of Naval Life' though relating to countries more remote from us than Cuba, advances a much stronger claim to our interest than the 'Letters.' The countries visited by the writer comprise a considerable portion of what was once called 'the World.' Countries which will ever be regarded by the classical scholar and the Christian as the *home* of his mind.—Scenes where his youthful fancy was taught to revel, where those struggles of freedom and triumphs of faith were seen and recorded by which the noblest sympathies of his nature were first enkindled.

The author seems to have viewed this classic ground with the enthusiasm of a scholar tempered by the philosophy of a Christian. We have room but for a single extract which includes the author's visit to the tomb of Agamemnon.

'Argos, until the present war, contained eight thousand inhabitants. It was beautifully situated, and, with its venerable castle above, was a fine object from every part of its extensive plain: but the whirlwind of Turkish war swept over it, and left it a mass of ruins. It is now rising again, and though but a few

streets have been built up, is thronged with an active population. A striking object among them, was an old blind man, led about by a boy with a guitar. He was singing to the crowds, and received a few paras in return : I stopped among them ; they led him to my horse ; and as he sung in soft Greek, about Greece and the Greeks, with such men about him as I have described, I thought of Homer, and almost felt myself realizing the visions I have had over the pages of the Illiad. I was in Argos too, Agamemnon's city ; and was going to Mycenæ to see his tomb ; and had only the day before been at Tirynthus.

' Leaving the blackened ruins of Argos, and taking the road to Corinth, I entered on the large plain that stretches to the North, North West, and East of the city ; and three miles from it, crossed by a stone bridge the channel of the Inachus ; this is now dry, but is occupied by a swollen and turbulent stream in winter. At the same distance beyond it, I left the main road, and striking into a path on my right, ascended some low hills lying against a ridge, like themselves of no great elevation or extent. It starts from a break in the mountains, runs Westward a few hundred yards, and then stretches to the South West. On it stood Mycenæ, where ruled, you recollect, Perseus, Sthenelus, Atreus, Agamemnon, Orestes, and many other celebrated names. Apart from all these associations, it is a place of vast interest to the traveller. It was destroyed by the jealous Argives, five hundred and sixty eight years before the Christian era. Pausanias speaks of its ruins, and describes them, many of them as they exist to this day : the knowledge of its position was soon after lost ; and in Strabo's time, no trace of it could be discovered. Modern research has brought it to light again, and the remains of Mycenæ are to Greece, what Herculaneum is to Italy.

' I ascended the ridge, and immediately after reaching its summit, observed on my right the monument that has so greatly puzzled antiquarians, and has received from them titles sufficient to satisfy a dozen modest antiquities. The names of Agamemnon's tomb, the Heroum of Perseus, and the brazen treasury of Atreus, have been most usually applied ; but all modern theories on the subject are overthrown by the recent discovery of another one, apparently similar to it, in all respects. The one I first noticed, is on the Eastern side of the ridge, in which it is partly imbedded. The entrance is on the East. A descent of thirty paces, along a wide alley, lined on each side with large stones, brings the visitor to the door way, where he stops in astonishment, at the immense size of the materials of which it is composed. It is fourteen feet high, and formed of solid blocks, of that length, with proportionate breadth and thickness : above is one nineteen feet in length ; and, just within this, is another

whose dimensions fill us with admiration at the bold and laborious enterprize of those times. It was originally twenty seven feet long, seventeen wide, and four and a half in thickness, but is now broken in the middle. Its vast size is seen only in the interior. The sides of the door way, which is eight feet wide, and twenty two in thickness, is composed of corresponding stones, some of them thirteen feet in length; all are regularly shaped. The edifice itself has been properly compared, in shape, to a bee-hive: it is forty five feet in diameter, about the same in height, and is lined with rectangular stones, all of large dimensions: the apex is formed by a circular stone, slightly ornamented. On the right, one fourth of the way round, is an entrance to a small cubical chamber, rude and cut simply from the natural rock, a very handsome breccia. In the stones coating the inside of the large chamber, are numerous brass nails, but their object is unknown, and indeed the whole is a mystery. Should the other monument be laid open, its character would probably be ascertained; and this we may expect to see done before many years. This one is about three hundred yards further north, near the summit of the ridge, and one hundred paces from the entrance of the citadel. The upper part has been excavated, and seven tiers of stone are laid bare, sufficient to shew that it is of the same character as the other, both in shape and dimensions: it was done, the natives informed me, by order of Veli Pacha, at the request of an English traveller.

Turning from this, towards the East, we have the citadel before us, and stand again amazed at the huge size of the materials, and the skill with which they are fitted together. "There were giants in the earth in those days," is the involuntary exclamation: so thought the ancients, and these structures are attributed by early and grave writers to the Cyclops; whence the order takes its name of Cyclopean. The ridge at this part is precipitous on each side, and the walls of the citadel run along its edge: they are of vast rocks, without cement, but with their inequalities corresponding so exactly as to give the structure an impregnable character. The entrance is on the West: it is along an alley, commanded by the heights of the citadel, and then through a gate-way, over which are the two lions, in bas-relief, mentioned by Pausanias; Nemean lions, if it so please you, though they bear a much stronger resemblance to leopards or tigers. The gate-way is nearly filled with rubbish; but in the lower part of the huge lintel are the holes, in which the pivots of the gate worked, as fresh as if made but yesterday: they are six inches in diameter. The gate was folding, and must have been of immense thickness, as the sockets for the bar, which are also uninjured, are three and an half feet back of those for the pivots of the gate. We are now in the citadel,

and find, that not content with the high massive wall, that guards its exterior, they here faced each rise of ground with a similar defence ; and the assailant is met with new difficulties at every step. There are numerous reservoirs scattered through the interior, with their stucco firm and uninjured : they are sufficient evidence that the Cyclopedian order was not the result of necessity, arising from their ignorance of mortar, as I have seen it somewhere asserted : near the Eastern end is a postern, similar to the great entrance, except in size.

‘ The most interesting object I have yet to mention. I had noticed remains of an aqueduct passing over the ridge : it could be easily traced to the citadel, and along a narrow passage between its Northern wall and the edge of the precipice : from this, I followed it into the break of the mountain, on the East, and at the distance of four hundred yards, came to a breach, from which the water gushed out, and flowed into a glen on the South. It created singular feelings, when I found myself standing among such scenes ; ruins of a city, that had risen, and gained a mighty name, and was destroyed, when Rome was yet little more than a village ; and when I saw the water flowing in the channel formed for it, by the men of Agamemnon’s time. The aqueduct is of the simplest character : it is of curved tiles, of no great depth, imbedded firmly in the earth, and covered with stones, over which earth was thrown. I think I am safe in giving it that age : it is of great antiquity, for the rocks, which formed its channel, at the citadel, are deeply worn, as are the sides of the precipice where the water overflowed : we have no notice of any ancient town here after the destruction of the original city. It is carried along the ridge, and thence to a reservoir in the plain. There is a wall, also, proceeding from the citadel, and enclosing the ridge, not heretofore noticed by any traveller. The whole place deserves more attention than has hitherto been given it : no other remains of this age, are in such excellent preservation : if examined, it would probably throw light on a period of Grecian history, still involved in obscurity and doubt.

‘ The citadel of Tirynthus, is of the same age and character, as that of Mycenæ. It is on a small eminence in the great plain, about three miles N. W. from Napoli : of the city itself, not a vestige remains, except some masses of brick work, from which nothing can be determined.

‘ You have now the plain of Argos : in the days of its glory, it must have been a splendid place. The plain itself, with majestic mountains on one side, and a bright sea on the other, is a beautiful one ; and when it had around it Argos, Mycenæ, Tirynthus, and Nauplia, with villages and groves and green fields between, while in all directions, the sun’s rays gleamed from

marble temple and portico and tower, or from the tombs of the mighty dead, it presented a scene that would yield only to Athens in interest, and scarcely to Athens. But how are the mighty fallen !'—pp. 4–9.

The works which we have thus cursorily noticed are well deserving of the attention of parents and teachers. The Sketches, in particular, should be frequently referred to in connexion not only with the study of geography, but that of the classics. Nothing excites a stronger interest in the deeds and writings of the ancients than a reference to the present state of the countries where they lived. Such a practice gives a reality and presence to what the pupil is reading, which excites his curiosity at the same time that it relieves the labour of translation and criticism.

• School libraries should always be furnished with well selected Travels ; and we know of none which better deserve a place in them than the works before us. The young tyro will find nothing in them which can corrupt his heart or mislead his judgment of foreign countries, and he cannot fail of learning much which is suited to liberalize his mind and raise him above the influence of national and local prejudice.

ART. III.—*Elements of Technology, taken chiefly from a Course of Lectures delivered at Cambridge, on the Application of the Sciences to the Useful Arts. Now published for the use of Seminaries and Students. By Jacob Bigelow, M. D. Professor of Materia Medica, and late Rumford Professor in Harvard University ; Corresponding Secretary of the American Academy of Arts and Sciences ; Member of the American Philosophical Society ; of the Linneæan Societies of London and Paris, &c. Boston. Hilliard, Gray, Little, and Wilkins. 1829. 8vo. pp. 507.*

This work answers faithfully to its title. This is no slight praise. It every where shows in what the application of the sciences to the arts consists, and what the effect has been of this natural association. Every page of it contains useful knowledge. Much of it is within the comprehension of every

one, and of the whole, the knowledge will be easy for the many to whom the elements of the matters treated are tolerably familiar, or who will give them the service of some reflection. This work may be read for the entertainment it will afford. This character is somewhat peculiar to it ; for it is not a common thing to meet with a strictly elementary work which possesses it in so striking a degree as to interest the mass of readers. We feel satisfied that this does ; and where so much useful knowledge is in close company with so much that is really entertaining, the author has laid for himself a strong claim on the obligations of the community.

The purpose of the author in his present publication is contained in his advertisement to the volume.

‘ A course of Lectures on most of the subjects which occupy this volume, has been delivered at Cambridge, during ten years past, in pursuance of the will of the late Count Rumford, by whose bequest a professorship is founded in Harvard University, on the Application of the Sciences to the Useful Arts. Parts of the same course have been repeated in Boston, to large audiences.

‘ The degree of interest which has been taken in these Lectures, has led me to believe that the subject is, in itself, peculiarly capable of exciting the attention and curiosity of students. There can be no doubt that the knowledge, which this study is intended to furnish, is of great use in the common affairs of life ; and probably its advancement has contributed more than that of any other science, to the improved condition of the present age.

‘ A certain degree of acquaintance with the theory and scientific principles of the common arts, is found so generally important, that most educated men, in the course of an ordinary practical life, are obliged to obtain it from some source, or to suffer inconvenience for the want of it. He who builds a house, or buys an estate, if he would avoid disappointment and loss, must know something of the arts, which render them appropriate, and tenantable. He who travels abroad to instruct himself, or enlighten his countrymen, finds in the works of art, the most commanding objects of his attention and interest. He who remains at home, and limits his ambition to the more humble object of keeping his apartment warm, and himself comfortable, can only succeed through the instrumentality of the arts.

‘ There has probably never been an age in which the practical applications of science have employed so large a portion of the talent and enterprise of the community ; as in the present ; nor one in which their cultivation has yielded such abundant re-

wards. And it is not the least of the distinctions of our own country, to have contributed to the advancement of this branch of improvement, by many splendid instances of inventive genius, and successful perseverance.

'The importance of the subject, and the prevailing interest, which exists in regard to the arts and their practical influences, appear to me to have created a want, not yet provided for, in our courses of elementary education. Information on these subjects is scattered through the larger works on mechanics, on chemistry, mineralogy, engineering, architecture, domestic economy, the fine arts, &c., so that it rarely happens, that a student in any of our colleges, gathers information enough to understand the common technical terms which he meets with in a modern book of travels, or periodical work. It is only by making the elements of the arts themselves, subjects of direct attention, that this deficiency is likely to be supplied.

'To embody, as far as possible, the various topics which belong to such an undertaking, I have adopted the general name of Technology, a word sufficiently expressive, which is found in some of the older dictionaries, and is beginning to be revived in the literature of practical men at the present day. Under this title it is attempted to include such an account as the limits of the volume permit, of the principles, processes, and nomenclatures of the more conspicuous arts, particularly those which involve applications of science, and which may be considered useful, by promoting the benefit of society together with the emolument of those who pursue them.

'In preparing for the press the lectures on which this work is founded, some variations from the original form have been made, together with such additions as my leisure from professional engagements has permitted. In doing this, occasional use has been made of the works of Robison, Young, Tredgold, and several of the late chemical writers. But as the present elementary volume is composed for the instruction of the uninitiated, rather than for the perfection of adepts, it has been found necessary to condense and to endeavour to render intelligible the subjects of consideration, rather than to dilate them by minute expositions and details. For the use of those students, who may wish to extend their inquiries in reference to any of the particular subjects, a list of some of the more prominent authors, and works of value, that treat upon the several subjects, is subjoined at the end of each chapter. Among some of these works, the authorities for the facts stated in the preceding chapters, will in most instances be found.

'For the convenience of seminaries which may make use of this work, the wood cuts and diagrams which are interspersed with the text, are reprinted at the end of the volume.'

In the introduction Dr Bigelow has briefly sketched the progress of the arts, and the circumstances which have determined their precise state in the different periods of their history. Arts are for the supply of wants, whether of necessity, convenience, or luxury. The amount of want then is the measure of their perfectness. They were quite sufficient for the demand, probably, in all periods of human history, and it was with the progress of the whole mind, the whole social state, that they made progress. Science was alike the fruit of the growth of the mind, and had its origin directly in a severe observation of every thing in nature and art which was favorable for its attainment. It is the doctrine of principles, slowly developed, indeed, but of unfailing truth, and sure persistency, when once established. Much of science has probably depended on mere accident. Without being aware of it the principle has been successfully applied, and it may have been for a long time, without having been understood, or adverted to ; and at times the most frequently observed phenomena have, without the least effort of thought, brought principles to light and to use, which the philosopher has devoted his whole mind to develop, and of which the humblest artizan has afterward habitually and successfully availed himself. From this fact in the history of discovery, it is safe to infer that we are at all times and every where surrounded by, and in near neighbourhood with, opportunities for discoveries which would be a lasting honour to ourselves, and a permanent benefit to others. These are daily more and more brought to light. All that is known is lessening the difficulty which lies in the path of valuable novelty ; and science, in lending its salutary aid, is giving a wider application, and still greater extent to the well known.

While so much may be granted to what is termed accident in the progress of discovery, most useful truths, and very curious knowledge have been derived directly from the existing science. To this may be referred the doctrine of the combustibility of the diamond, which Newton taught years long removed from the establishment of the fact itself by the aids of modern chemistry. So was the preservation of copper on the bottoms of vessels by the contact of a more oxidizable metal, as taught by the late Sir Humphrey Davy, a discovery which belongs wholly to a severe course of induction from previously established scientific principles. It is in this way that science is to bring to light the unknown,—to go before in the toil of discovery, and while it lessens the labour, make the harvest

more sure. There seems no end in such a progress, and it is the honour of our age that so much is now doing to promote it. It has a single recommendation which must secure to it the strong interest of those who are devoted to scientific labour. What it discovers is sure, and has a determinate place in the system to which it belongs. It is less likely than perhaps all other kindred knowledge, to be unsettled by future discovery. It is the fruit of principles already established, and derives from them its individuality, and its permanence. There is much in these considerations to recommend the method to which we allude. But it should not be concealed that there are, and must be periods in the history of every science, in which principles are insecure, or not wholly developed, and the system which rests on them may require to be more or less changed or modified in the progress of discovery. Some of this uncertainty has always attached to chemistry, a science which rests so much on facts as the strong pillars of its support. There never was a more beautiful system than that of Lavoisier. It was perfect in the light which his discoveries shed around it. His arrangement, and nomenclature, every where discover the beautiful symmetry, the exquisite harmony of that which they illustrate. We need not even advert to the change to which this system has been necessarily subjected in the progress of discovery; and we need not inquire how far these have had their necessity in the manner in which much of chemical discovery was originally brought about.

Dr Bigelow's work is on the application of the sciences to the arts. This is to us the source of the strong interest which we are quite willing to acknowledge we feel concerning it. We would recommend it to the man of leisure as furnishing a vast variety of topics for reflection, and as a treasury of interesting fact. There is too much concern in the whole community in the matters about which it treats for the man of leisure even to escape all its influences. Knowledge is coming to be the property of the multitude, and he whose education ceased, when this spirit of universal teaching came forth, will be a stranger to some of the strongest interests in the community, unless he devotes to them some of his time. We know no single volume which will so well answer his purpose as this. The great number and variety of topics treated of in this volume, made it necessary that the account of each should be short. But to obviate the objection that this might give rise to, the author has given at the end of each chapter full referen-

ces to the best works which treat each subject in detail, or at greater length. This is a very useful addition, and may be referred to with advantage by those who have already much knowledge of the topics treated, as well as by the class more particularly adverted to above. As a work of reference the whole volume is peculiarly valuable. Its tables of contents, and its index are so full, that while in the body of the work, we find a classification of subjects, we have in these, facilities not unlike those which an encyclopedia or dictionary affords.

The volume commends itself to the professed teacher. To him it must be invaluable. It is a great text book on which a course of instruction on the arts may be founded which will be absolutely complete. The author has found nothing relative so insignificant as to be passed over with neglect, and has fearlessly hazarded the imputation of triteness, that he may bring together every thing which belongs to his subject. We think this a very important feature of the work, and though in many instances we have little more than a definition, this is so universally a philosophic one, a true generalization, that we get all the knowledge that the plan of the work allows us to expect.

We shall now offer our readers a brief analysis of the contents of this volume, and make some extracts to show the plan of the work. It is divided into twenty one chapters. The 1st treats of the Materials used in the Arts, as they are derived from the mineral, the vegetable, and the animal kingdom. In the II. the Form, Condition, and Strength of materials, are given. The III. treats of Writing and Printing. This is a very interesting chapter, though we cannot but express our regret that the author has not availed himself of the labours of the younger Champollion in decyphering the Egyptian hieroglyphics. These have been eminently successful already, and the zeal and ability which are still continued to this most curious study by the same individual, are an earnest of a far greater success. The latest accounts from this learned and indefatigable traveller add daily confirmation to his earlier views, and increase to him the obligations of all the lovers of antiquity.

Chapter IV. is on Designing and Painting. From this we make the following extracts.

‘ CHIARO OSCURO.

‘ Next to correct perspective, the most important circumstance in painting, is the correct distribution of light and shade. To the skilful management of these, we are indebted for the strength

and liveliness of pictures, and what is technically called their *relief*, or the elevation which certain parts appear to assume above the plane upon which the picture is made.

'Light and Shade.—Light and shade, as they appear to us upon natural objects, are the consequences of the rectilinear motion of the rays cast upon them by luminous bodies. If an object be exposed to the rays of the sun, or of a single lamp or candle, those parts or surfaces which are presented directly to these rays, become strongly illuminated, and acquire a lighter cast approaching to white. Those surfaces which stand obliquely to the light, receive less of the rays, and of course have a deeper tinge. Those lastly, which are averted from the light, and receive no rays but such as are reflected to them from other objects, acquire a very dark shade, approaching, when contrasted with the others, towards black.

'The distribution of light and shade upon any object, is always proportionate and correspondent to its shape. An even or plane surface, exposed to the sun's rays, will be equally illuminated throughout, since whatever be its position, its parts will all make a similar angle with the rays. But uneven or irregular surfaces will be unequally illuminated, the prominent parts receiving most light, and the depressed portions most shade, an effect which will be increased, if the light falls obliquely or sideways. If the irregularities of surface be sharp and strong, the changes from light to shade, will be sudden, and the contrast great. On the other hand, if they are smooth and rounded, the transition will be soft and gradual.

'Association.—As bodies are never seen, except when they are illuminated, the manner in which light and shade are distributed upon them, forms by association a part of our ideas of their shape. Painters have learned to imitate this arrangement of light and shade, by varying the quantity and intensity of their coloring substances, so as to produce in the mind the same associations of shape from a plane surface, as would arise from the falling of light on the original object itself. This art constitutes what is technically called the *chiaro oscuro*, from the Italian words signifying *clear* and *obscure*. Next to perspective it is the most important part of painting, and there are many cases in which perspective alone would wholly fail to convey to us a correct idea of the form of objects, were it not assisted by appropriate insertion of lights and shades. Thus a circle, a sphere, and a cone viewed vertically, may all have the same perspective outline; but their difference of figure becomes apparent, as soon as we consider their distribution of light and shade.

'Direction of Light.—The most distinct perceptions of shape are produced when the light falls in one direction, *e. g.* when it is received immediately from the sun, or from a single window or

candle. The distinctness of an object is always impaired, when it is situated between cross lights, or when it is illuminated by a variety of windows or candles on different sides of the room. An object may even be so surrounded with lights, that it shall be impossible to discover its exact shape. Its outline indeed will be discernable, but the equal illumination on all sides, will exclude the existence of shadow, and of course we shall lose the power of appreciating the comparative distance of its parts from the eye. In most paintings, we find that the principal mass of light falls in one direction. An oblique or a sideways direction, is most common, though a front, and even a back light, is managed to produce very striking effects. Painters also exercise their skill with the introduction of cross lights, from different windows, or lamps ; but the successful execution of a piece of this sort is more difficult, than with a single light.

‘ *Reflected Light*.—Owing to the reflection which takes place from all terrestrial bodies, we find that objects, in most situations, have not only a principal or direct light, but also a secondary or reflected one. Hence the darkest part of globular and cylindrical bodies, is not that which is most remote from the original light. This part receives from the reflection of objects beyond it, a faint illumination, so that the darkest part will be found between it and the part on which the light directly falls.

‘ Sharp lights, or such as are intense and sudden, indicate polished surfaces, and are employed to represent them. Where they are accompanied by very deep shades, they express great elevation above the common surface. Faint lights, on the contrary, imply a dull surface, obscure illumination, or small elevation.

‘ *Expression of Shape*.—Light and shade, are not adequate, in all cases, to give us certain indications of the forms of bodies. Surfaces which appear concave in one direction of the light, may appear convex, if the light is introduced from the opposite side. In contemplating an undulating object, like a curtain, or its picture upon paper hangings, we are often at a loss to distinguish the elevated, from the depressed portions ; and by a little effort of the imagination, we can persuade ourselves that a particular part is at one time elevated, and at another, depressed. *Cameos* and *intaglios* may be mistaken for each other, and any of the figures may appear prominent or depressed, in the same part, by reversing the direction in which the light is supposed to strike upon them.

‘ In cases of this sort, our final ideas of shape are derived, not only from the object itself, but from its relations with contiguous objects.

‘ *Eyes of a Portrait*.—The influence which the association of contiguous objects has upon our ideas, is strikingly exemplified in

the eyes of a portrait. We estimate the direction of the eyes, not only from the position of the ball in regard to the eyelids, but also from the relative position of the remaining features of the face. Dr Wollaston has shown, that the same eyes in a picture, which looks at us, may be made to appear averted from us, if we apply new features to the lower half of the face. The reason, why the eyes of a portrait appear to follow us, in all parts of the room, is simply, that the relative position of the features cannot change, so that if the picture appears to look at us once, it must appear to look at us always. If we move to one side of a portrait, the change, which happens, is unlike that which would take place in a bust, or living face. The picture is merely foreshortened, so that we see a narrower image of a face, but it is still that of a face looking at us. And if the canvass be transparent, the same effect takes place from the back of the picture.

' Shadows. Shadows are cast in the direction opposite to that by which we suppose the light to enter, and their introduction in pictures, always heightens the effect. A painted object, is relieved, or raised from the surface, by the expression of light and shade on itself. But the relief is greatly increased, if the shadow which it makes on the ground, or other surface, be also introduced. Shadows are commonly softened off at the edges, or terminate gradually. When, however, the light is strong, or the shadow very near to the object, its termination is more abrupt.

' Aerial Perspective.—This name is given by painters, to the mode of producing the effect of distance, by a diminution in the distinctness and brightness of objects, according to their remoteness from the eye, and the condition of the medium through which they are seen. It is well known, that distant objects appear indistinct, and of a grayish or bluish tinge, from the effect produced by the intervening atmosphere. Their indistinctness is increased, if the atmosphere is hazy. Their appearance is also modified by the degree of their illumination, and by the character of the light which falls on them. The painter, therefore, finds it necessary to consider the depth of atmosphere which is interposed between him and his object, the condition of this atmosphere, and the quantity and color of the light which falls on it, and on the objects. A want of attention to these circumstances, gives rise to the defect called *hardness* in painting.

COLORING.

*' By the aid of perspective, and the *chiaro oscuro* alone, very good representations of objects may be obtained. All our common engravings, wood cuts, drawings in India ink, in black crayons, &c., derive their expressiveness from these only. But a still nearer approach to the appearance of nature, is made, by*

the employment of *colors* analogous to those which are found to exist in the objects represented.

Colors.—From the science of optics, we learn that the solar beam is divisible into seven primary colors, white being the mixture, and black the privation of all of them. These colors, are violet, indigo, blue, green, yellow, orange, red.* Three of these are capable of producing all the rest, by their intermixture and degree, viz. blue, red, and yellow.

The color belonging to different natural objects, was supposed, by Newton, to be occasioned by a power which their surfaces possess, to reflect certain rays, while they absorb all the rest. This power is so infinitely diversified in nature, that we find not only every kind of primary ray reflected, but likewise every possible tint, and intermediate grade, which can be produced by the admixture of two or more original colors. To represent these various hues, it is necessary that the painter should possess coloring substances analagous to them all, or capable of producing them all by mixture, and that he should apply them in such a manner, that the true color may remain distinct, independently of the lights and shades necessary to place the objects in relief.

Shades.—In a colored painting of an object which has any rotundity of form, there are usually, at least, three tints, or degrees of color. These are the *light*, the *middle tint*, and the *shade*. Of these, the middle tint is the one which represents the true color of the object, and occupies an intermediate situation between the light and shade. Thus in the painting of a red fruit, for instance the cherry, the middle tint is vermilion, or some similar color, being that which the surface of the fruit would have, if it were perfectly flat. The part of the fruit nearest the light, has a very bright color partaking of white, while the remote parts are shaded with lake or some darker red. In like manner, a yellow fruit, like the lemon, has not only the true color of the rind, but is lightened at the top with straw color or white, and shaded with brown toward the edges. It is necessary that the colors used for dark shading, should be in some degree correspondent with the middle tint, and not diametrically opposite to it. Thus, in single objects, yellow cannot be shaded with blue, nor red with green.

Tone.—Pictures differ from each other in the respective depth of color, which pervades the whole piece. The word *tone*, bor-

* Dr Wollaston found the spectrum formed in looking through a prism at a narrow line of light, to consist of four colors, red, green, blue, and violet, with a narrow stripe of yellow. The three simple colors, red, green, and violet, may produce yellow, by the admixture of red and green; crimson, by red and violet; blue, by green and violet, and white by the combination of all three.

rowed from the art of music, signifies in painting, the peculiar cast, or governing hue, which a picture, or a color, possesses. Thus if dark masses of color, with feeble lights, predominate, the piece has a deep or low tone, while if the reverse exists, a bright or light tone is produced. It is essential to harmony that a picture should have the same tone throughout, or that its lights and shades should correspond in their intensity to the tone which governs the whole.

' Harmony.—When different objects are grouped together in the same view, each one possesses two kinds of color, the *original* color, and the *adventitious*. The original color, often called among painters the *local* color, is that which belongs to the object itself, independent of situation. The adventitious color, is that which is reflected upon it from neighboring objects, and which of course depends upon situation. For example, the color of the human face is that which we call flesh color, and, if painted alone, may be represented by the shades of that color. If, however, it is surrounded by a purple drapery, it receives a purplish tinge, and requires to be so represented. In like manner, a yellow dress communicates to it a yellow cast, &c. An attention to this adventitious coloring, combined with a uniformity of tone, constitutes the basis of what is technically called *harmony* in painting. Harmony requires that strong and glaring colors should never be forcibly contrasted with each other, but that each object should partake at its edges of a certain portion of the color which predominates in objects near to it. This rule not only produces effects most grateful to the eye, but an observance of it gives, in fact, the only true representation of nature.

' Contrast.—Colors are divided by painters, into the *warm* and the *cold*. Warm colors are those in which red and yellow predominate. Cold colors are blue, grey, and others allied to them. Neutral colors are intermediate tints, or mixtures. Of the various pigments or coloring substances, which painters employ, none have the genuine brilliancy of the prismatic rays; and all fall short of the hues produced by nature in living objects. The petal of a flower, the feather of a bird, and the wing of an insect, are tinged with a richness and splendor, which no factitious colors can equal. Painters can only approach, when necessary, towards the brightness of natural colors, by availing themselves of the effect of contrast, and by heightening one color by the introduction of others, which prepare the eye for its more perfect and favorable reception.

' Remarks.—The power of giving true representations of objects, is derived, originally, from an attentive study of the colors and appearance which they actually exhibit in nature; afterwards from a comparison of the success of different artists, and

an attention to the means they have employed. What belongs to the philosophical part of painting, can hardly be said to extend beyond the correct imitation of nature. But the inventive part, the design and composition of great pieces, such as have not necessarily any originals in nature, requires not only philosophic accuracy, and practical skill, but also demands original genius, strength and fertility of imagination, and a strong perception of sublimity and beauty, whether natural or moral. To paint a portrait, or a landscape from nature, requires no more than a faculty of correct imitation. But to express on the canvass a scene of history or of fiction, to create forms of ideal beauty exceeding the realities of life, and to express, by attitudes and lineaments, passions, which tell the events they accompany,—this excellence is attained by few; it is not to be taught by any rules of art, but, like poetry, and eloquence, it is within the reach of those only, whom a strong and exclusive interest in the pursuit, has qualified to feel deeply, and to express powerfully.'—pp. 82--89.

Engraving and Lithography are the topics of chapter V. Sculpture Modelling, and Casting, of chapter VI. Chapter VII. is of Architecture and Building. After a description of the separate objects which belongs to these subjects, the various styles of architecture are described, viz.—the Egyptian; the Chinese; the Grecian; the Roman; the Greco-Gothic; Saracenic, and Gothic style. Chapter VIII. treats of the arts of Heating and Ventilation; Chapter IX. of Illumination.—From this we extract the following.

' *Reflectors.*—For obvious reasons, a lamp yields most available light, when it is placed in the centre of a room, or space to be illuminated. In this situation, if a reflecting surface be brought near to it, this surface by its reflection will increase the amount of light in one direction, at the expense of intercepting it in another, so that the total advantage is not increased by the reflector. But when a lamp is placed near a wall, so that a part of its rays are wasted by falling immediately upon the wall, in this case if a polished surface be placed behind the flame, it reflects back most of the rays, which would otherwise be lost upon the nonreflecting wall; and thus it increases the effect of the light. The familiar fact that rooms with light colored walls are most easily lighted, is owing to the greater reflective power which such walls possess, when compared with darker surfaces.

' *Hanging of Pictures.*—As the surface of varnished paintings has a considerable reflecting power, it happens that when the spectator stands in the way of the reflected light, his eye is dazzled, and rendered incapable of distinctly perceiving the picture. Paintings, therefore, should not be hung opposite to

lights, nor in any situation in which a line drawn from the place intended for spectators will make the same angle with the surface of the picture, as a line drawn from a window or other illuminating point; the angle of reflection being always equal to the angle of incidence. As a general rule, a picture will be in a bad light with regard to a spectator, whenever the image of a window could be seen by him in a looking glass occupying the same place as the picture.

' Transparency of Flame.—If two lamps be placed by the side of each other, the flame of the one, when clear of smoke, does not intercept the light of the other, and casts little or no shadow. Count Rumford found that the brilliancy of flame is, in some high ratio, proportionate to its elevation of temperature. If several concentric circular wicks, or several parallel flat wicks, be burnt near together, they produce more light, in consequence of the accumulation of heat, than they would do if burnt separately.

' Glass Shades.—To relieve the eye from the glare of light, produced by bright lamps, shades of roughened glass are frequently used. A rough surface upon glass may be produced by grinding it with sand or emery, by corroding it with fluoric acid, or by covering it with powdered glass and exposing it to heat, till the particles adhere. Glass shades have the effect to disperse the rays of light, by the numerous reflections and refractions which they occasion; till at length the light issues from all parts of their surface, and it appears as if the glass itself were the luminous body.

' Sinumbral Lamp.—The reservoir of the sinumbral lamp, is constructed on the same general principles with that of the Astral. The ring, however, which holds the oil, is so formed as to oppose the smallest diameter of its section to the rays of light. A large shade of ground glass is used, which nearly incloses the light, and by the different refractions and reflections given to the rays by the ground glass, they escape in all directions, so that there is no perceptible shadow at a small distance from the ring. Reflectors are sometimes added, when it is desired to throw the principal mass of light in one direction.

' Measurement of Light.—The following method of measuring the comparative illuminating power of different lights, is founded on the law, that the amount of rays thrown on a given surface, is inversely as the square of the distance of the illuminating body. Place two lights, which are to be compared with each other, at the distance of a few feet, or yards, from a screen of white paper, or a white wall. On holding a small card near the wall, two shadows will be projected on it, the darker one by the interception of the brighter light, and the fainter shadow by the interception of the duller light. Bring the fainter light near-

er to the card, or remove the brighter light farther from it, till both shadows acquire the same intensity, which the eye can judge of with great precision, particularly from the conterminous shadows at the angles. Measure now the distances of the two lights from the wall or screen, and the squares of these distances will give the ratio of illumination. Thus if an Argand flame and a candle stand at the distance of ten feet and four feet respectively, when their shadows are equally deep, we have the square of ten and the square of four, or 100 and 16, as their relative quantities of light. In this experiment the spectator should be equidistant from each shadow.'—pp. 182--184.

Chapter X. of the arts of Locomotion ; XI. of the Elements of Machinery ; XII. of the Moving Forces used in the arts. From this chapter we offer the following.

Sources of Power.—It is the office of machines to receive and distribute motion derived from an external agent, since no machine is capable of generating motion, or moving power, within itself. The sources from which the moving power applied to machinery is obtained, are various, according to the nature of the object, and the amount of force which is required. Men and animals, water, wind, steam, and gunpowder are the principal agents employed as first movers in the arts. Their power may be ultimately resolved into those of muscular energy, gravity, heat, and chemical affinity. But although these are the sources of all the important force which is artificially employed in moving large masses of matter, yet certain other agents are also capable of producing motion upon a more limited scale, such as magnetism, electricity, capillary attraction, &c.

Vehicles of Power.—Besides the original forces which have been mentioned, there are certain intermediate agents which serve to accumulate and transmit power, after the first mover has ceased to operate. These agents commonly act either by their elasticity, their gravity, or their inertia. Springs and compressed air are examples of vehicles acting by their elasticity, and their usefulness continues only till they have recovered the situation from which they were disturbed by another force. In like manner a weight acting by its gravity on an axle or wheel, prolongs for a season the influence of the power by which it was wound up. Fly wheels are also vehicles which serve by their inertia to continue the action of a force while it intermits. Vehicles of power are highly useful in equalizing the irregularities which are incident to prime movers, in prolonging their action through convenient periods of time, and in multiplying the modes of their application.

'A fundamental distinction among mechanical agents, both original and secondary, consists in this ; that in some the inten-

ity of their action, or the acceleration they produce in a given time, is the same, whether the body acted upon be at rest or in motion; in others it is greatest when the body acted on is at rest, and becomes less as its velocity increases. Gravity is the only force which is certainly known to act with equal intensity on bodies in motion, and at rest; though magnetism probably possesses the same property. Every other important power acts more forcibly on a body at rest, than on one which has already acquired motion in the direction in which it acts.* This happens with the strength of animals, the impulse of fluids, and the elasticity of springs.

ANIMAL POWER.

' Muscular energy is exerted through the contraction of the fibres which constitute animal muscles. The bones act as levers to facilitate and direct the application of this force, the muscles operating on them through the medium of tendons, or otherwise. Muscular power is much greater in some animals, than it is in man, owing to their size, or more active mode of life. It is greatest in beasts of prey.

' *Men.*—The power of a man to produce motion in weights or obstacles, varies according to the mode in which he applies his force, and the number of muscles which are brought into action. In the operation of turning a crank, a man's power changes in every part of the circle which the handle describes. It is greatest when he pulls the handle upward from the height of his knees, next greatest when he pushes it down on the opposite side, though here the power cannot exceed the weight of his body, and is therefore less than can be exerted in pulling upward. The weakest points are at the top and bottom of the circle, where the handle is pushed or drawn horizontally.

' If a windlass be provided with two cranks placed at right angles with each other, two men will perform much more work, than they could if the cranks were disconnected, because at the moment one puts forth his strength to the least advantage, the other is exerting his with the greatest effect.

' The mode in which a man can exert the greatest active strength, is in pulling upward from his feet, because the strong muscles of the back as well as those of the upper and lower extremities, are then brought advantageously into action, and the bones are favorably situated by the fulcra of the levers being near to the resistance. Hence the action of rowing is one of the most advantageous modes of muscular exertion, and no method which has been devised for propelling boats by the labor of men, has hitherto superseded it.

' According to Mr Buchanan, the comparative effect produced by different modes of applying the force of a man, is nearly as

* See Huxley's *Lectures on Natural Philosophy*, vol. 1, p. 177.

follows. In the action of turning a crank, his force may be represented by the number 17. In working at a pump, by 29. In pulling downward, as in the action of ringing a bell, by 39. And in pulling upward from the feet, as in rowing, by 41.*

' In estimating the different applications of animal force, we must take into consideration not only the resistance they can overcome, but the velocity with which they move, and the length of time for which they can be continued. Violent efforts are not true specimens of a man's labor, since they can be exerted for a short time only. A moderate computation of an ordinary man's uniform strength, is, *that he can raise a weight of 10 pounds to the height of 10 feet once in a second, and continue this labor for ten hours in the day.*† This is supposing him to use his force under common mechanical advantages, and without any reduction for friction.

' *Horses.*—Horses are often employed as movers of machinery by their draught. A horse draws with greatest advantage when the line of draught is not horizontal, but inclines upward, making a small angle with the horizontal plane, as already stated, page 197. The force of a horse diminishes as his speed increases. The following proportions are given by Professor Leslie for the force of the horse employed under different velocities. If his force when moving at the rate of two miles per hour, is represented by the number 100, his force at three miles per hour will be 81,—at four miles per hour 64,—at five miles 49,—and at six miles 36. These results are confirmed very nearly by the observations of Mr Wood.‡ In this way the force of a horse continues to diminish, till he attains his greatest speed, when he can barely carry his own weight.

' Various estimates have been made of a horse's power, by Desaguliers, Smeaton, and others, but the estimate now generally adopted as a standard for measuring the power of steam engines, is that of Mr Watt, whose computation is about the average of those given by the other writers. The measure of a horse's power, according to Mr Watt, is, *that he can raise a weight of 33000 pounds to the height of one foot in a minute.*

' In comparing the strength of horses with that of men, Desaguliers and Smeaton consider *the force of one horse to be equal to that of five men*; but writers differ on this subject.

' When a horse draws in a mill or engine of any kind, he is commonly made to move in a circle, drawing after him the end of a lever which projects like a radius from a vertical shaft. Care should be taken that the horse-walk, or circle, in which

* See Brewster's Edition of Ferguson's Mechanics, vol. ii. p. 9. The whole numbers are 1742, 2856, 3888, and 4095.

† Young's Lectures on Natural Philosophy, vol. i. p. 101.

‡ Treatise on Rail Roads, p. 293.

he moves, be large enough in diameter, for since the horse is continually obliged to move in an oblique direction, and to advance sideways as well as forward, his labor becomes more fatiguing, in proportion as the circle in which he moves becomes smaller.

'In some ferry boats and machines, horses are placed on a revolving platform, which passes backward under the feet whenever the horse exerts his strength in drawing against a fixed resistance, so that the horse propels the machinery without moving from his place. A horse may act within still narrower limits, if he is made to stand on the circumference of a large vertical wheel, or upon a bridge supported by endless chains which pass round two drums, and are otherwise supported by friction wheels. Various other methods have been practised for applying the force of animals, but most of them are attended with great loss of power, either from friction, or from the unfavorable position of the animal.'—pp. 253–257.

Chapter XIII. treats of the Arts of Conveying Water ; XIV. Arts of Dividing and Uniting Solid Bodies ; XV. Arts of Combining Flexible Fibres ; XVI. Arts of Horology ; XVII. Arts of Metallurgy ; XVIII. Arts of Communicating and Modifying Colors ; XIX. Arts of Vitrification ; XX. Arts of Induration by Heat ; the XXI., and last chapter is on the Preservation of Organic Substances.

ART. IV.—*Remarks on the Duty of States in regard to Public Education.*

A SYSTEM of education which may give to every member of American society, a portion of knowledge adequate to the discharge of his duties as a man and a citizen of the republic, is essential to the advancement of private interest, the maintenance of public virtue, the due appreciation of talents, the preservation of a sacred regard to principle, and of a high tone of moral sentiment. A system which affords to such as are endowed with superior capacities, the means of making proportional attainments, is also intimately connected with the interest of the nation at *home*, through those who administer, and *abroad* through those who represent our government ;

with the extension of just and liberal opinions in relation to the effect of free governments ; with the union and fraternity subsisting between the members of the confederacy, and with the general character of the nation for liberal sentiments and grateful recollections.

If these statements be just, we are led to ask under what *authority* the blessings of learning are to be secured to the nation ? The government of the Union has manifested no decided inclination to act efficiently in the matter. And as the legislative department has shown no disposition to exercise its acknowledged powers, in relation to this subject, even within the district where it possesses sole dominion, it is not to be expected that the same power should be extended over the whole nation, where a *plausible*, at least, if not *valid* Constitutional objection may be raised against its exercise ;—and much less are we to suppose that the concerns of education will supersede, in the minds of *executive* officers, the great subjects of war and peace, of commerce and revenue, of foreign embassies and international relations. These great, absorbing interests will of necessity continue to engross the attention and speculations of the active, aspiring candidates for public distinctions and emoluments. Happy will it be for the community, if those whom it delights to honour with a station in this department, shall *themselves* be at all times found experimentally acquainted with the advantages of a sound and finished education, united with commanding talents, and an integrity above suspicion. A statesman with these qualifications cannot fail to exercise an important indirect, if not immediate influence on the standard of taste, knowledge, and refinement throughout the land, and to stimulate by countenance and example what he may not be able to support by positive legal provisions.

In proportion, however, as knowledge, whether elementary or profound, is to be regarded as a blessing, in the same degree is the want of it, to be esteemed a misfortune. Each and every portion of this Union has therefore an interest in the success of every effort to diffuse the means of education, separate from any calculation of profit and loss, and from any reference to the great and momentous national concern, already mentioned as involved in this subject. Indeed there are various interests besides that of education, in which the nation at large has a deep stake ; yet the general legislature cannot, consistently with its prescribed powers, materially interfere. Such are the encouragement of agriculture, the bestowing of charters for local establishments, whose effects,

notwithstanding, are felt far beyond the sphere of their immediate operation. Adverting to the manner in which *these* interests are, and must continue to be managed among us, we are furnished with an answer to our inquiry by what authority the benefits of learning are to be conferred on the whole American community. The separate State legislatures, have in several instances already practically settled the question, by a long course of legislation on the subject. Others have contented themselves with partial, inconsiderable efforts applied to a class of persons not the most likely to appreciate the blessings of knowledge, and least disposed to acknowledge an obligation which places them in a degraded relation to their fellow citizens. A third class of States are still wavering between a resolution to provide an efficient system of education for themselves, and a vague, perhaps a vain, hope, that something may still be expected from the liberality or the justice of the general government, towards this object. We cannot refrain from expressing in this place the admiration excited by the policy of one enlightened State, which, while engaged in an enterprise for internal improvement, the grandest that our country has ever witnessed, perhaps that the genius of man has ever devised, simultaneously erected a system of *universal* as well as *liberal* education, by means of which more than eight thousand ordinary, and numerous superior seminaries are put into operation, and more than 400,000 youths of both sexes are annually admitted to the inestimable blessings of either solid or useful, or polite and finished education. To estimate justly the immense influence of that amount of talent which will thus be brought from a dormant to an active condition, is perhaps beyond the power of calculation.

To behold its full display, we must search every cottage and farm house as well as every mansion, for the energy and enterprise, united with the firmness and sobriety of character which it has developed; we must note the change from a devotion to material life and animal gratifications, to a pursuit of intellectual speculations; we must penetrate, in short, every bosom made in any degree capable of being warmed by the radiance of genius, or filled with loftier and purer sentiments.

An apprehension has sometimes been indulged, that the interests of the several States would become merged and lost in that of the confederation. Nothing is better fitted to preserve the distinct individuality of the States, than reserving to themselves the superintendence of the concerns of education. Not

only will the thoughts and opinions of the inhabitants of each State then possess a distinctive peculiarity, but the feelings, biases, and mental associations, will also be found to retain a strong binding force between the individual and his native State. The *earliest* impressions are to a great majority of mankind the strongest that they ever realize. As when these impressions are made with the seal of virtue, they remain the pledges of future excellence ; so when they are derived from circumstances in our social condition that possess genuine worth, or from institutions which assist to confer that worth, they enchain the affections with a force which no subsequent changes of fortune can sever. The attachment to our native State which we thus derive from her institutions for education, is, however, perfectly consistent with an enlarged patriotism embracing within its circle every portion of our country, as well as with a liberal philanthropy that extends its good wishes, and would extend its good offices to every member of the human race. Indeed one of the first effects of a liberal system of education, on the minds and feelings of a community, is a display of more extended benevolence, of a less niggardly parsimony, of a magnanimity that can embrace sublime conceptions, of a patriotism that regards the greatness and glory as well as the quiet and happiness of the nation ; and both the one and the other, are paramount to the petty profits, mean devices, and sordid calculations of mere self-interest.

But perhaps it will be contended, that if a State possess eminent physical advantages, enjoying a salubrious climate, a productive soil, navigable streams, and profitable mines, these may suffice to insure her rank and respectability among her neighbours. But let us not deceive ourselves. Mankind are not to be imposed upon by these substitutes for true greatness. They will not accept the vain display of acres and roods of arable, pasture, and woodland, as clear evidence of the *greatness* of a State. They are not yet such converts to the doctrines of *materialism* as to fancy that the spirit and intellect of society are wholly dependent on matter of any sort, and least of all on lifeless, brute matter, for their efficiency. A State may, with all these physical capabilities, proceed in a monotonous course of pecuniary prosperity, as injurious to its moral purity and its mental activity as the severest visitations of calamity. But this course can terminate in nothing but weakness. Animal gratification may be as abundant, uninterrupted, and in-

tense as the grossest appetite could desire, and yet nothing may be added to the permanent reputation of the State.

The destiny of man is for activity and improvement ; the destiny of *states*, that would maintain a respectable rank, is for activity and improvement. Without this character of progressive advancement any single State must soon feel its relative degradation, must feel, (if there be a feeling in the community,) the mortifying sense of insignificance.

Unless, then, the moral and intellectual eminence of a great state, correspond to its physical advantages, the latter rather redound to its disgrace than to its credit. The lover of his country walks by the streams and mountains of his native land, and asks himself what are the destinies of this physical Elysium ? what are the glorious realities to which the sages and bards and patriots of our country have, for the last half century, been aiming the labours of their hands, the energies of their minds, the glow of their eloquence, the inspiration of their verse ? Is it to witness these vales which might vie with Tempe in amenity, these rivers to which Peneus and Tiber are but puny rills,—swarming with hordes of mere grovelling worms in human shape ? to see these noble forests levelled to give place to a rank and poisonous growth of sleeping plants, with the form only of God's image—breathing only to exhale a moral pestilence—and to turn into a pandemonium what might otherwise be a paradise ?

The question presses itself on the whole, and on every part of the nation, whether our citizens shall dream away existence in inglorious ease, following the blind impulses of animal passion ; whether they shall pursue the servile track of imitation, from age to age ; whether they shall say, and believe, and do, just as much and no more than their fathers ; or whether they shall obey the dictates of sound reason, adopt the results of faithful experience, be alive and awake to the dearest interests of humanity, as well as to all the beauties and glories of nature by which they are surrounded ; whether they shall strike out new paths in which to mount to perfection ; whether they shall have a political, a philosophical, a moral, and religious faith of their own, unbiassed by the absurd and arbitrary dogmas of sophists and demagogues and bigots on the one hand, or of libertines, disorganizers, radicals, and infidels on the other ?

These are questions on which each separate State of this Union, which has not already settled the point, is deeply interested in deciding ; inasmuch as on the promptitude and cor-

rectness of the decision, depends in a great measure the prosperity of its present and the character of its future generations. Those States which shall have the wisdom and foresight to adopt sound and salutary systems of public education, will no longer feel the mortification of being regarded as the objects of derision to a whole nation, the more awkward and ridiculous, in proportion to their superior bulk. Their chief magistracy will be honourable and independent, because well informed constituents will know their own dignity to be degraded when their sovereign authority is delegated to the hands of drivelling imbecility. Their courts of justice will be upright, learned, and wise, because their decisions must be submitted to the scrutiny of a discerning public, the humblest member of which can detect errors, inconsistencies, and partialities. Their statute book will not exhibit a tissue of clumsy enactments, each vying with its predecessors in absurdity, because ignorance will no longer be deemed an essential requisite in a legislator. Their cities will echo to the voice of honest labour, greeted with the frequent interchange of courtesies and kindness. Their sons shall be distinguished for elevated sentiments, raising them equally from that sordidness which stoops to grasp at petty dishonest gains, and from that contemptible pride which shrinks from a pursuit of honest and industrious callings; while their daughters shall be regarded with that sacred delicacy which revolts at the thought of an unhallowed purpose, and with that chivalrous pride which scorns to impose on them the menial offices of life.

J.

ART. V.—*Address to the Members of a Society, on the plan of a Lyceum, in one of the Western States.*

AGREEABLY to your request I would offer for your consideration such ideas as occur, on the utility, introduction, conduct, and management of a society for improving your own minds, and amending the present course of instruction of your children.

It is certainly encouraging to see ladies disposed to avail themselves of all the facilities for improvement afforded by the liberality of enlightened society. To females these privileges have been greatly multiplied within this last half century. Yet

I presume it is not contemplated to establish and conduct a society of this kind without the concurrence, advice, and assistance, and indeed the direction and management of the other sex. Men, besides the advantage of a more scientific education, are more accustomed to this kind of things, and perform all business-like affairs with more ease and accuracy ; and by their education and experience, the imagination is chastised into somewhat more reasonable limits ; and they pursue measures better calculated for permanency than the more ardent temper of woman usually permits. But the meeting of these opposite electricities may produce a mental action that no quantity, however great, of one kind alone would be able to effect. Husbands and wives, sons and daughters, brothers and sisters, I conclude, are to share the labours, profits, and pleasures of your association.

The first requisite must be provision for the pecuniary demands. Let a fixed price be annexed to the privilege of membership, and gratuitous subscriptions collected for procuring books and other apparatus, for illustrations and experiments ; an additional quarterly tax to be imposed for defraying incidental expenses, and procuring periodical and other new publications, as they come out. And, moreover, as you can hardly expect ever to become able to bear the expense of so extensive an apparatus as to meet all the desired subjects of application, it seems desirable that you encourage, by every practicable measure, the formation of societies of a similar character in the several villages in your region of country ; and that you establish, through committees or delegated correspondents, an intercourse for the mutual exchange of books and apparatus, and the repetition of lectures and other instruction ; diminishing the expenditures, whilst increasing the advantages to all.

I cannot propose any specific regulations, merely suggesting that the exercises be as various as may consist with utility, encumbered with the fewest possible formalities. Curiosity and interest must be kept alive. This is not to be done by mere conviction of usefulness. Though proud of considering ourselves rational creatures, it must be remembered that we are but intellectual animals, materially and mentally subject to similar laws, and cannot subsist but by often repeated stimulus ; that nothing is effectually done or attained that is not pursued with a degree of passion or fervour. It is the overlooking this principle of excitability and the necessity of continued stimulus, that seems the chief cause why so many associations for men-

tal improvement have had but an ephemeral existence. When their several rules have been 'conned by heart and acted out,' the novelty ceases, the excitement subsides, the system languishes, the body dies, and that a natural death, though perhaps of few months' existence.

The exercises may sometimes consist of regular lectures; sometimes essays, or other short compositions may be read in the club, with intervening meetings for familiar conversation. There is no general easy mode of instruction at the same time so useful, pleasing, and permanent, as sprightly, sensible, enlightened conversation. For the management of this, the principal direction requisite, is that given by the apostle to the early Christians, to 'let one speak at a time;' but between this and lectures there is an intermediate course, more difficult than either to regulate, but more valuable, as it more necessarily brings into exercise the mental energies of the several individuals; an object of primary importance in every species of instruction. This course must consist in different members alternately epitomizing and recounting their course of reading from one meeting to another. Let a certain number, whom abilities and leisure may best qualify for the office, be selected, and the writings of different authors on any given subject, or illustrative of it, be put into their hands for perusal, to be reported and discussed at the next meeting. After one reader has related the nature, conduct, principles, and opinions of the work perused, and made his own remarks thereon, any other member may make comments, or criticisms, or ask questions, &c.

Having gone through with one author, another reader will proceed in similar manner; thus running over the several works assigned for the exercise of that meeting, and collecting whatever appears most valuable and practical from all. We may suppose the management and instruction of children to be the subject of several such exercises. Would not several amendments in our own practice be rendered obviously necessary and practicable? Suppose, again, that historical information be the object of another course. For facilitating it, let there be appointed some one to deliver lectures on the most profitable manner of pursuing it, pointing out the most important objects of observation and research; or, in the manner above recommended, one member may read a volume on the subject by one author, another member peruse a different author, making an abstract of their opinions, recommendations, and directions,

for the general information. Priestley, Volney, Bigland, and various others will be found useful in this pursuit.

In entering on an historical course some particular epoch should be selected, and the history of one people assigned to one reader, whilst another member peruses that of another people ; civil history, to be read by one, church history by another ; any works of science, philosophy, or taste, illustrative of the state of society, customs, manners, &c., of the same period, should be examined in connexion with the general history, that the state of all the cotemporary nations may be brought into one concentrated view. That more extensive knowledge may be thus obtained by persons having little leisure, than can be done by solitary reading, must be sufficiently obvious ; attended with less labour and far greater pleasure and profit.

To young persons wholly unacquainted with history, the most useful and most interesting method is to commence with the personal history or biography of certain distinguished actors in the political world, as a Washington, a Franklin, a Lafayette, or a Bonaparte ; and having read such memoirs, to peruse the history of the time and people with whom the subject was an actor. Curiosity is naturally led thence to inquire into the state of such people previous to those events. Having in this manner run backward through American and English affairs, with a general sketch of Europe for the last century, the young mind is better prepared to take hold of the more stately volumes of philosophic and ancient history. Whenever ancient history is attempted, resort must be had to every species of information for ascertaining the state of civilization, customs, manners, arts, science, philosophy, and religion, of any people ; bringing into comparison the different nations of the earth. After several historical meetings, let them be succeeded by others for experiments and illustrations of the principles of philosophy, science, and arts ; or by exhibitions of the fine arts, ancient relics, natural curiosities, &c. As often, at least, as once a month something new must be devised. Stimulus (beyond the mere sustenance of existence) must be varied, or it loses all salutary effect. The reading and criticising poetry, with other works of taste, may constitute another variety ; illustrating their spirit, their conduct, and power of pleasing. Every body reads Milton, and almost everybody Shakspeare ; yet how small a proportion of readers understand and relish any thing of the ingenuity, art, and invention of the poet ! Periodical

essays, or miscellaneous papers, descriptive of men and manners of any age, will also be found pleasing, and not without their uses.

The occasional writing of themes or essays, by individual members, for the instruction and amusement of all, is likewise to be recommended. And, should your society like to acquire manly vigour for 'the gymnastic exercises of the mind,' works of mental philosophy, I trust, will find their way into your library, and be read with advantage. We cannot expect to make great advancement in improving the mind whilst unacquainted with the nature and exercise of its several powers. It is the investigation of principles and influences, and their mode of operation that I intend by mental philosophy. Moral philosophy, properly speaking, should enter into every species of instruction; but I could wish that we possessed (or at least that I knew that we were in possession of) some treatise immediately upon that subject, more practically operative than our common classic works that fall under that denomination. It is not a work to tell us what is the essence of morals, or why we are obliged to do right, that is the desideratum; but something to teach youth by what course of observation, reflection, and conduct, good feelings may be substituted for perverse or angry ones, to show them how kindly sensations are to be produced and sustained in themselves, and how they constitute happiness; and how the sordid gratifications prove their own torment, and how the social affections bring their own abundant reward. No one does evil for the pure love of producing pain, and could persons of bitter, selfish dispositions understand how their own misery is thus enhanced, and how 'by giving liberally one increaseth in riches,' would not their feelings assume a more benevolent character?

I must be permitted to offer a caution that you set not expectation too high. Very brilliant effects are not at once to be expected from any combined efforts. Yet so essential is social intercourse, not alone for obtaining information from others, but for evolving from their native napkin one's own talents; and for sweetening all intellectual exercise, that philosophers have concluded that any one condemned to absolute solitude, where mental entertainment would seem essential to comfort, would, nevertheless, lose all relish for books and literature, though from them had previously flowed his highest gratification. He would rather devote himself to whistling to a cricket, and feeding a mouse or a spider. If habits of society be so indispensable to

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mental existence, they are not less so for ascertaining the character and strength of one's powers by comparison with others. From all these considerations the advantages of associations would seem incalculable ; or at least to be estimated only by rule of permutation, multiplying the original conceptions, suggestions, and effusions of each individual mind into those of all the others.

ART. VI.—*New Work on the Art of Teaching.*

THE Reverend S. R. Hall, Principal of a seminary in Concord for the instruction of teachers, which has already furnished a large number of instructors of both sexes for the States of Vermont and New Hampshire and the adjoining British dominions, has prepared a course of lectures on the art of teaching, which is in press, and will shortly be published by Messrs Richardson & Lord, of this city.

After an examination of the work in manuscript, we have no hesitation in saying that it will prove an invaluable manual for instructors, particularly those who are just entering upon the arduous business of conducting a school. It contains, moreover, a great deal of matter which is particularly deserving of the attention of school committees and parents, as it points out with great force and precision, their duties in relation to instructors and schools.

The leading subjects embraced in the lectures are as follows:

LECTURE I.

I. *Obstacles which tend to prevent the Usefulness of Common Schools.*

1. Indifference of parents to the importance of instruction.
2. Unwillingness to attend school district meetings.

LECTURE II.

Obstacles which prevent the Usefulness of Schools, continued.

3. Unwillingness to provide apparatus and books.
4. The existence of parties and the prevalence of party spirit in school districts.
5. A disposition among the more wealthy citizens to send their children to private academies.

6. A want of Christian effort to raise the moral character of schools.

7. A deficiency in the qualifications of instructors.
8. Unwillingness on the part of school districts to make adequate compensation to instructors of approved talents and qualifications.
9. A want of books adapted to the capacities of children.
10. Inconvenience of school rooms.

LECTURE III.

II. *The requisite qualifications of Instructors.*

1. Common Sense.
2. Uniformity of temper.
3. A capacity to understand and discriminate character.
4. Decision of character.
5. A schoolmaster should be affectionate.
6. He should possess a just moral discernment.
7. A thorough knowledge of the branches required to be taught in district schools, and of the elements of natural and moral philosophy and chemistry, and of the constitution of the country.

LECTURE IV.

III. *Practical Directions to Instructors.*

1. Endeavour to become acquainted with the nature of your employment.

Importance of this to the enjoyment and usefulness of the teacher.

Means of acquiring this knowledge.

1. By reading works on education.
 2. By reflecting on the common nature of children.
 3. By studying the varieties of character among parents.
 4. By conversing with experienced teachers.
2. Consider the responsibility of your office.

LECTURE V.

Practical Directions to Instructors, continued.

3. Endeavour to ascertain by what means you are to gain that ascendancy over your pupils which is necessary in order to confer on them the highest benefit.
 1. Convince the scholars that you are a real friend to them.
 2. Be not hasty.
 3. Never speak angrily nor scold.
 4. Be punctual in every thing.
4. Be willing to devote your time to your school and strive to make the most judicious use of it.

LECTURE VI.

Practical Directions to Instructors, continued.

5. Govern your school, and in order to do this effectually govern yourself.

In governing,

1. Determine to have order in the school.
2. Treat your pupils as reasonable and intelligent beings.
3. Let your government be uniform.
4. Let it be characterized by firmness.

LECTURE VII.

Practical Directions to Instructors, continued.

5. Let the government of your school be impartial.
6. Consult the future and permanent welfare of your pupils in your mode of government.

Remarks on the mode of investigating conduct and punishing offenders.

1. Never be in haste to believe that your scholars have done wrong, and be not in haste to accuse them.

2. Never punish for a fault until its nature and criminality are understood by the culprit.

3. Decide on such a mode of punishment as will be most likely to benefit the pupil and prevent a repetition of the offence.

4. Always make the punishment effectual in humbling the offender.

Administration of Rewards.

1. Promise no rewards.
2. If given let them be rewards of exertion, not of talent.

LECTURE VIII.

Practical Directions, continued.

6. General Management of schools.

1. Endeavour to adopt such a course as shall render the school pleasant to the members.

2. Reduce every thing to system.

3. Let every exercise be done thoroughly and faithfully.

4. Let subjects receive attention in proportion to their real importance. Some instructors devote too much time to a small class occupied with a favourite study.

7. Direction of Studies.

1. Begin with the most simple and intelligible branches.

2. In advancing, give the preference to those branches which will be most useful in the business of life.

LECTURE IX.

Practical Directions, continued.

8. Mode of Teaching.

1. Regard the subject more than the text book—things more than words. X

2. Let it be your object to have every subject of study thoroughly understood by the pupil.

3. Use the most simple modes of illustration.

4. Make every study as pleasant as possible to the pupil.

Directions for instruction in Spelling.

Directions for instruction in Reading.

LECTURE X.

Practical Directions, continued.

Directions for instruction in Arithmetic.

Directions for instruction in Geography.

Directions for instruction in English Grammar.

Directions for instruction in Writing.

Directions for instruction in History.

LECTURE XI.

Practical Directions, continued.

Instruction in Composition.

Remarks on improving favourable opportunities for making impressions on the minds of pupils, such as natural phenomena, incidents in history, providential events, &c.

LECTURE XII.

Practical Directions, continued.

Remarks on the methods of engaging the attention of pupils to their studies.

Discussion of the question whether emulation and ambition should be used as stimulants to study.

On the means to be employed for stimulating the exertions of pupils.

1. Present the importance of knowledge and mental improvement as qualifications for respectability, usefulness, and happiness in future life.

2. Approbation of friends and instructors.

3. Love of learning for its own sake.

4. Moral obligations.

LECTURE XIII.

Practical Directions designed particularly for the use of female instructors.

It will at once be seen that the subjects discussed by Mr Hall are of the most interesting and practical nature ; and it is

but justice to him to say that the above abstract presents but a meagre account of the rich variety of useful and practical matter contained in his lectures. We shall embrace an early opportunity, after the work is published, of reviewing it and presenting such extracts as will furnish a fair specimen of the author's style and manner of discussing these highly interesting subjects.

ART. VII.—*A New System of Geography, Ancient and Modern, for the Use of Schools, accompanied with an Atlas, adapted to the Work. By Jedidiah Morse, D. D. and Sidney Edwards Morse, A. M. Twenty Sixth Edition. Boston. Richardson & Lord. 1828. 12mo. pp. 323.*

It may seem to be rather a late hour for us to take up the review of Morse's Geography ; and we should deem some apology necessary for having neglected it so long, did we not know that our readers are aware of the necessity we have hitherto been under of bringing forward what was new and unknown, instead of following in the track of public opinion and adding our sanction to what had been long known and approved. Our notices of new works have been so full and particular that we are now at leisure to examine some of their predecessors ; and we feel that it is but justice to begin with one of our earliest and most successful authors in the department of school books.

We consider Doctor Morse and his coadjutor in the present work as advancing two distinct and well founded claims to public patronage. In the first place, Doctor Morse was emphatically and truly the Father of American Geography ; and in the second place, he has kept up with the age in the progress of improvement. Not that he and his coadjutor have copied the improvements of others in our country ; for it appears that the latter distinctly claims the merit of originating independently the system of general and comparative views, used by Mr Woodbridge and Mrs Willard, without denying them the same merit ; and the interrogative system of Gay and Goldsmith was promptly adopted as soon as their works became known here.

“The general and comparative views,” says the junior editor, in his preface to the twenty sixth edition, ‘form only one feature of our improvement. The whole plan embraces three things. 1. *Outline views* of the globe and its grand divisions. 2. *Connected descriptions in detail* of the different countries or parts of each outline. And 3. *Recapitulatory or general and comparative views*. This is the plan which the mind requires in order to the easy performance of its task.—After having described very briefly the shape and size of the earth, and its relations to other parts of the universe, the pupil should be presented with a brief outline of the surface of the whole globe; consisting of little else than the names and relative position of its oceans, continents, and grand divisions. He is then prepared to commence immediately the study of some one of these divisions—North America, for example—and here, he should be presented with another outline, exhibiting the prominent features of the country, such as the mountain ranges, the great river lines, the principal bays and gulfs, the long chain of lakes, &c., in describing all which, care should be taken to introduce no names which will not be immediately intelligible to the pupil. Such a view will prepare him to come with advantage to the study of the descriptions of particular countries, and any further introduction to these descriptions, we conceive to be entirely unnecessary. The plan of beginning elementary treatises of geography, with general views of the animal, mineral, and vegetable kingdoms, of the various races of men, degrees of civilization of different nations, &c. we conceive, is wholly wrong, because, in giving such views, there is a constant use of the names of countries, people, and places, with which the pupil has not yet been made acquainted. The object of every introductory view, in an elementary treatise, should be to make the succeeding parts of the work more intelligible. It is, therefore, highly improper to insert here what cannot be understood, till the pupil has arrived at the close of the volume.

‘The same observations apply to the second head of our plan—the *descriptions in detail of different countries*.—Here also, there is an order to be observed, there is a connexion and dependence of the various heads, which make it proper that they should follow each other in a particular succession. This has been heretofore much neglected by all geographical writers. Towns, rivers, mountains, canals, &c. are thrown together without any reference to the proper order of description, and thus the student is compelled to go over the account again and again, before he can get a connected view of the whole country. We have endeavoured to avoid this error. For example, in the account of Spain, p. 196, after naming the boundaries, divisions, and capes, we give a connected view of the great mountain ranges, showing how they all spring from the Pyrenees, and diverge into different parts

of the peninsula. The rivers are described after the mountains and in reference to them, because the course in which they run is determined by the ridges, each great river draining the country between two of the mountain ranges. Cities come after rivers, because in describing the position of some of the cities, we have occasion to name the rivers on which they stand. Thus, instead of a mass of names and things, having no perceptible connexion with each other, the pupil finds that he can put them together in a regular series, and often that he can reason from one to the other. Thus natural associations are formed, which aid the memory, and the acquisition of knowledge in this way becomes easy and delightful.'

The method here presented of conveying a notion of the general features of a country is excellent ; and the plan of examining pupils in outline maps, by way of general review, will be found to furnish an admirable means of testing their proficiency.

One of the worst difficulties for pupils in the study of geography arises from the dry, uninteresting manner in which the facts are recorded in the text books, and from the continual repetitions which are permitted to occur in them. From these defects the present work is remarkably free ; the style is easy and unaffected ; and wherever it can be done with propriety the names of places are connected with some striking historical association, or some interesting fact in natural history. Care is taken, moreover, that the same description should not be applied to a thousand different towns. The instructor who has ever used a text book of a different character will know how to appreciate these points of excellence.

On the whole, whether we consider the number of improvements embraced in the present work, the amount of information contained in it, the ease and purity of its style, or the neatness and accuracy of its execution both in the text and the maps, we must assign it a high rank among school geographies ; nor do we intend any disparagement to its numerous competitors, when we say that, although with reference to some particular points it may be excelled by one or more, yet considered with regard to its various improvements taken collectively, it is inferior to none of them. It is this general excellence which has enabled Morse's Geography to maintain its ground amidst a host of new competitors in an age of novelty and change, and which will continue to secure it an extensive circulation wherever books are tried on their own merits.

ART. VIII.—*The Mercantile Arithmetic, adapted to the Commerce of the United States, in its Domestic and Foreign Relations. With an Appendix containing Practical Systems of Mensuration, Gauging, and Book-keeping. A New Edition, revised and improved. By Michael Walsh. Boston. Richardson & Lord. 1823. 12mo. pp. 416.*

WALSH'S Arithmetic is one of those time-honored works whose fame rests upon their every day utility. It is found not only in the school-room, but in the counting-house, and the ship's cabin. The lad, who has used it at school, retains it in after life, and refers to it as an undoubted authority in the transactions of commerce, and the young adventurer who goes to seek his fortune in foreign lands, puts his Walsh in his chest to serve at once as a guide to the money transactions of other countries, and a memento of home and the laughing days of school-boy happiness.

In the present improved edition, Mr Walsh has introduced several important additions, as appears by his title-page, but has not availed himself of Pestalozzi's system of mental arithmetic. This is as it should be. He thus yields the place of a first book in numbers, to those books which furnish instruction on the new system, and reserves to his own work the place which it will long continue to occupy, that of a sequel to mental arithmetic and practical preparation for the counting-house.

The merchants have complained loudly that boys who were sent into their service, after having studied arithmetic, algebra, geometry, &c., on the purely scientific and philosophical plan, without having been exercised freely on practical questions, had come to their business utterly unprepared, and were continually making blunders in the most common details of trade; while those who had gone laboriously and faithfully through Walsh, were completely *au fait*—up to the active transactions of commerce.

We can readily believe this. It is no more than a commentary on the old adage that, 'practice makes perfect.' A youth who has satisfied himself with learning the philosophy of arithmetic and applying its principles just enough to determine their abstract truth, cannot so readily become an expert salesman and accomptant, as one who has patiently wrought out a complete series of practical questions. Still we say, let the philosophy of arithmetic be carefully studied; let the boy be

thoroughly exercised on the mental plan ; and then, as a preparation for business, let him go carefully and faithfully through Walsh. He will do it in half the time that used to be occupied before mental arithmetic was introduced into our schools ; and he will find it rather a pleasing than an irksome task. When this practice shall prevail extensively, we shall have no more complaints from our merchants, that mental arithmetic unfits boys for the compting-house.

ART. IX.—*The ‘Expositors.’*

THERE is a practice which has ceased, in a great measure, in New England, but continues to prevail extensively in the Middle and Southern States, to the great hindrance of sound education and the incalculable waste of precious time. We allude to the practice of *requiring children to commit dictionaries and abridgments of dictionaries to memory*. In many schools children are required to commit the definitions contained in a small duodecimo, called the ‘*Expositor*,’ from the time when they are able to learn a column or even half a column of them, to the period when they leave school and enter upon the business of life. They finish the book in something less than a year, when having, of course, forgotten the former part of it, they begin again, and the process goes on in this manner till their ‘education is finished,’ as the phrase is, and they abandon the study of *words* to commence that of *things*.

But this is not the worst of the business. The definitions contained in most, if not all the ‘*Expositors*,’ are not only imperfect, but generally wrong, and frequently the most whimsical imaginable, having no perceptible connexion with the real meaning of the word. Fortunately for us in New England, there are none of these books to be found here, so that we cannot at this moment furnish examples of the truth of the above assertion ; but we would recommend to any of our readers, who are in want of amusement, to send to the South, or, if he lives there, to send to any bookstore for a school *Expositor*, and if he does not find many of its definitions a better antidote for low spirits than any jest book, from Hierocles to Joe Miller, we will forfeit all our claims to a true perception of the ridiculous.

The inquiry naturally arises with any one who has never been accustomed to such things, why children are required to waste their time on such an unprofitable study? What is the apology offered by parents and instructors for suffering such a Gothic practice to exist? The reply is, that it is of vast importance for a child to know the meaning of words. True; but the first step towards a knowledge of the true meaning of words is to study the *nature of things*. To define one arbitrary term by another arbitrary term, does not furnish the means of increasing the pupil's knowledge, but it enables him to appear to know more than he does. The Expositor says nothing of the nature of the things mentioned in it—it does not even furnish any clue to the etymology of the words; but in nine cases out of ten, the term given as a definition is as unintelligible to the child as the term defined—often more so, and the memory is tasked and burdened, year after year, without increasing the stock of ideas or developing the powers of reasoning, or even teaching the meaning of words so much as might be done by half a dozen familiar lectures on natural philosophy, or the reading of a popular treatise on any of the useful sciences.

'But the child,' says the parent or teacher, 'must learn the meaning of words, must acquire a stock of words for the purpose of conversation and letter writing, and how is he ever to do this without studying the dictionary or the Expositor?' We answer, in a variety of ways. First, *indirectly*, by studying things. Let him learn scientific terms by attending to popular treatises of the sciences themselves. Let him learn the other terms used in conversation or books, by inquiry of those he converses with, or by reading, with a dictionary at hand for reference. The teacher who cares for the good of his pupils, will direct such a course and see that it is followed; while he who studies his own ease will direct the child or the class to commit a page of words for one evening's work, and set one of his large boys to hear it recited in the morning.

The meaning of words may be learned by a direct process, which should never supersede the indirect one, already recommended, but which may very properly take the place of the 'Expositor' system. This is the learning of a foreign language. Nothing excites attention to the precise meaning of words in the vernacular language so effectually as the study of a foreign one, no matter whether it be a dead or a living language. This is the shortest and the most direct way to correct knowledge of the meaning of English words and an accurate English

style. Let no parent or teacher say that this would occupy too much time, while it is a fact, a dead certainty, that one fifth of the time usually spent on the 'Expositors,' where those books are used, would give a sufficient knowledge of French to enable a child to read without a dictionary, and a sufficient knowledge of Latin to translate with facility with a dictionary.

Happily for the present age the study of Latin is simplified so as no longer to require the toil of years before a Roman author can be read; and French is brought to every man's door in the shape of a book for self-instruction. Ignorant teachers will raise an outcry against such an innovation as the substitution of a foreign language for the Expositors; and parents will be cajoled with such arguments as the following;—

'Fine times truly! Things have come to a pretty pass! Here are children learning French and Latin, who don't understand their own language. For my part I think it best to have a good English education before one troubles one's head about foreign languages. This parade of learning is all nonsense. I do not believe in learning French and Latin before one is perfect in one's English. No, no, the Expositor for my money. It is time enough to think of foreign languages when a child knows the meaning of all the words in our own.'

It is a sufficient answer to all this to say, that by learning a foreign language, one becomes acquainted with the structure of language, with the principles of etymology and definition, and the general relation of thought to expression; and thus acquires a key to the meaning of words in the vernacular tongue, which the committing of Johnson's folio dictionary, with all the references, to memory, would not furnish.

'But what shall we do for instructors in foreign languages?' the parents will inquire. Make it a requisition for your teacher to know Latin or French and you will soon have a supply. While there are such books as Bolmar's Perrin, and his edition of *Telemaque*, and Walker's *New Latin Reader*—books which furnish the means of learning either language in the evenings of a winter, by any adult of common sense—country teachers will not choose to remain ignorant of these languages. If the present generation of schoolmasters are too indolent to teach themselves these languages, let parents do their duty in making the requisition absolute; and successors will easily be found who will be ready to sacrifice their own ease to the welfare of the rising generation.

Central School of Arts and Manufactures, designed to form Civil Engineers, Directors of Mill Works, Heads of Manufactories, &c. &c. Authorised by his Ex. M. de Vatismenil, Master of Public Instruction. Founders, Messrs Laval, Director; Benoit, Dumas, Olivier and Pécllet, Professors.

(Continued from p. 275.)

Programs of the instruction of the Central School of Arts and Manufactures.

The instruction of the Central School of Arts and Manufactures is arranged conformably to the programs of which a list here follows :

Course of Geometry.

of Practical Natural Philosophy.
of Machines and Mechanic Arts.
of Chemistry and Chemical Arts.
of Analytic Chemistry.
of the Working of Mines.
of the Art of Building.
of Practical Natural History.
of Statistics and Political Economy.

Designs relative to all the courses.

Manipulations relative to the courses of Chemistry, Natural Philosophy, and Mechanics.

Course of Descriptive Geometry.

By M. Olivier—Former pupil of the Polytechnic School, Ex-Professor in the School of Application at Metz, &c. M. C. Adjunct Professor.

The professor, at the beginning of his course, will explain to the pupils the theory of logarithms, the use of the tables, and the elements of plane trigonometry.

The course of descriptive geometry will last one year.

In the first part of the course, the professor will endeavour to make the pupils familiar with the various modes of projections. To insure afterwards that they have a thorough knowledge of the elements of geometry of the three dimensions, and that they are able to make use with facility and intelligence, of the various graphic constructions of descriptive geometry, he will cause them to make applications to perspective and to shades. A certain number of these applications will be proposed as problems, and the solution of them performed without the aid of the professor.

In the second part of the course, the professor will developpe the various applications of descriptive geometry :

1. To Stone-cutting;—2. to Carpentry;—3. to Mechanics;—4. to Astronomy.

In the applications to mechanics, he will show how one can, in certain cases, make good use of rigorous results, but obtained by difficult and long constructions, by results inexact it is true, but sufficient for practice, and preferable for the engineer, because they are obtained by an expeditious method.

Of the right line of the plane.

First construction.—1. *Question.* Through a point given in space, to draw a right line parallel to a given right line, and to find the magnitude of a part of this line.—2. Through a given point, to draw a plane parallel to a given plane.—3. To construct a plane which may pass through three points given in space.

Second construction.—4. Two planes being given, to find the projection of their intersection.—5. A right line and a plane being given, to find the projection of the point where the right line meets the plane.

Third construction.—6. Through a given point, to draw a perpendicular to a given plane, and to construct the projection of the point of meeting of the right line and the plane.—7. Through a given point to draw a right line at right angles to a given right line.—8. A plane being given, to find the angles which it forms with the planes of projection.

Fourth construction.—9. Two planes being given, to construct the angle which they form between them.—10. Two right lines which cut each other being given, to construct the included angle.—11. To construct the angle formed by a right line and a plane, given as to position in space.

Fifth construction.—12. Two right lines being given in space, to determine the position and magnitude of the line which measures their shortest distance.

Of plane tangents, and of normals to curved surfaces.

Sixth construction.—13. To draw a plane tangent to a cylindrical surface;—1. Through a point taken in the surface;—2. Through a point taken without the surface;—3. Parallel to a given right line.

Seventh construction.—14. To draw a plane tangent to a conical surface;—1. Through a point taken in the surface;—2. Through a point taken without the surface;—3. Parallel to a given right line.

Eighth construction.—15. Through a point taken in a surface of revolution, of which the meridian is known, to draw a plane tangent to that surface.—16. Through a point taken in the sheet hyperboloid, to draw a plane tangent to that surface.—

17. Through a point taken upon the hyperbolic paraboloid, to draw a plane tangent to that surface.

Ninth construction.—18. Through a point taken in a regular surface, to draw a plane tangent to this surface ;—application, 1, to the conoid ;—2, to the helicoid, [surface of the thread of a screw.]

Of the intersection of surfaces.

Tenth construction.—To construct the section of a right cylinder, through a plane perpendicular to one of the planes of projection.—To draw the tangent to the curve of intersection, to make the development of the cylindrical surface, and to refer to it the curve of intersection as well as its tangent.

Eleventh construction.—To construct the intersection of a cone ; 1, right ; 2, oblique, through a plane perpendicular to one of the planes of projection ; development and tangent.

Twelfth construction.—To construct the intersection of a surface of revolution through a plane, and the tangent to the curve of intersection ; application, 1, to the ellipsoid ; 2, to the sheet hyperboloid.

Thirteenth construction.—To construct the right section of a cylinder, to draw the tangent, and to construct the development.

Fourteenth construction.—To construct the intersection,—1, of two cylindrical surfaces,—2, of two conical surfaces,—3, of a cylindrical surface and a conical surface,—4, of two surfaces of revolution whose axes meet,—5, of a conical surface and a surface of revolution.

Application to the solution of certain problems.

Fifteenth construction.—Four points being given in space, to find a fifth which may be at equal distances from each of them, that is, to circumscribe a sphere about a pyramid.—Four planes being given, to find a point which may be at equal distances from each of them, or to find a sphere tangent to four given planes.

Sixteenth construction.—In a solid angle of three faces, there exist three rectilinear angles formed by the edges among themselves, and three diedral angles formed by the mutual inclinations of the faces. Of these nine angles, three being given, to find the others.

Seventeenth construction.—To draw to a helix traced upon a right cylinder a tangent parallel to a given plane.—Through a given point upon a spherical epicycloid, to draw a tangent to this curve.

Eighteenth construction.—Through a given right line to draw a plane tangent to a sphere.

Nineteenth construction.—Through a given right line to draw a plane tangent to a surface of revolution ;—1, to the ellipsoid ;—2, to the sheet hyperboloid.

Twentieth construction.—To construct a right line resting upon four given right lines.

Applications of descriptive geometry.

1. *To Linear Perspective.*—General notions upon perspective and upon the apparent outlines of bodies. The pupils will execute various constructions.

2. *To Shades.*—General notions upon shades. The pupils will execute numerous constructions of shade.

Wash.—The pupils will wash for effect, under the direction of the professor of design, some of the drawings in shade which they shall have executed.

3. *To Stone-cutting.*—1. *Construction.* Curve slope, in bevel, presenting a cylindrical scoop.—2. Curve slope in a round tower, in bevel, and presenting a spherical scoop.—3. Turned slope, or cow's horn (two solutions).—4. Back vault of Marseilles.—5. Long gothic-arch vault, and cloister-arch vault.—6. Right descent.—7. Sloping descent (two solutions).—8. Trumpet slope in the angle.—9. Ridge-arch vault in a round turn.—10. Winding stair-case, open for light, and with solid newels.

4. *To Carpentry.*—1. *Construction.* Right ridge;—2. Oblique ridge;—3. Inclined span;—4. Winding staircase. The pupils will have to trace a certain number of combinations pointed out by the professor.

5. *To Machinery.*—Tracing of gearings and of curves described by moveable points in machines, &c. &c.

6. *To Astronomy.*—Projection of solar dials.

Course of Geometry of three dimensions.

The professor will give, during the course of descriptive geometry, numerous lessons, in which he will determine, *by geometry*, the principal properties of conic sections and of surfaces of the second order, and those of transcendental curves, and of surfaces of superior orders, which find their application in the arts.

Course of Topography.

Elementary notions of Topography.

The pupils will execute in the field, surveys with the plain table, the compass, the surveyor's square, and will besides be exercised in levelling.

At the commencement of each lesson, the professor will question a certain number of the pupils; the adjunct professor will moreover have two interrogatories a week. At the end of each year the pupils will undergo a general examination.

Course of Natural Philosophy.

By M. Pérlet—Former pupil of the Normal School, Master of Conferences in the Preparatory School, Ex-Professor of Natu-

ral Philosophy at Marseilles, &c. M. Caladon, Adjunct Professor.

The course of Natural Philosophy is divided into two parts, corresponding to the two years of studies. The first part includes the physical properties of solids, liquids, and gases, at rest or in motion; the second, those of the imponderable fluids. The first part will comprehend all the facts of rational mechanics, which are important in applications. The most of them will only be enunciated, since the mathematical knowledge possessed by the pupils will be insufficient to enable them to comprehend their demonstration. But the manner of applying them will be enlarged upon. In this part of the course much development will be given to the theory of the resistance of solid bodies at rest or in motion, in liquids and gases, and to that of friction. In the second part, the theory of heat will principally be enlarged upon.

Although this course of natural philosophy is chiefly directed towards useful applications, the plan comprehends all classes of physical phenomena; but a great number will be examined only in a very succinct manner. This arrangement has the advantage of uniting among themselves the different parts of natural philosophy, of facilitating their study, and of imprinting the facts on the memory; advantages which would not be attained by treating merely of the physical phenomena which have useful applications to the arts. Besides, if the pupils ought not to study certain theories, they ought to know of their existence, in order that they may labour under no illusion in relation to the difference which exists between the part of the science which they have studied, and the science considered in all its developments.

First Year.

General properties of bodies.—Extension, measure of extension; system of measurement; gauging; different instruments; impenetrability; divisibility; atoms; mobility; different kinds of forces; time; units of time; instruments for the measure of time; velocity; inertia; measure of forces; composition of forces which act upon the same point; equilibrium of a material point; motion of a material point, free or required to rest upon a curve or a surface.

Permanent forces which act upon bodies.—Gravitation; weight; general phenomena; centre of gravity; law of weight both above and below the surface of the earth; law of the fall of a body at a small distance from the earth; intensity of weight at the surface of the earth; apparatus designed to measure the bulk of bodies, balance, steelyard, bent lever balance.

Molecular attraction.

Repulsive force of heat.

Of solid bodies.—Porosity ; density, different methods of determining it ; phenomena which result from the greater or less stability of the equilibrium between the particles of solid bodies. Elasticity ; ductility ; frangibility ; resistance to the stroke ; resistance to pressure ; resistance to traction ; resistance to being worn or used ; structure of solid bodies ; equilibrium of solid bodies ; motion of a free solid body ; motion of a solid body around a point, a right line, or upon a surface ; friction ; laws ; tables ; shock of bodies, solid, soft, and elastic ; use of solid bodies to transmit motions.

Of liquid bodies.—Porosity ; density ; areometer of Baume, of Cartier ; alcometer, volumeter ; areometer giving the densities ; phenomena which result from the greater or less stability of equilibrium between the particles of liquid bodies ; compressibility ; elasticity ; viscosity ; cohesion ; equilibrium of liquid bodies ; principles upon which the laws of the equilibrium of liquids are founded ; equilibrium of liquids subjected to whatever forces, equilibrium of liquids enclosed in vessels of large dimensions ; lateral pressure ; equilibrium of liquids in capillary spaces ; equilibrium of floating bodies ; motion of liquids ; motion in open canals ; motion in conduit pipes ; flowing through orifices in very thin partitions, through pipes ; shock of liquids against solid bodies ; motion of floating bodies ; use of liquids for transmitting and modifying forces ; use of liquids as moving forces.

Of gaseous bodies.—Atmosphere ; general properties of the gases ; measure of the elastic force of the gases ; barometers ; law of Mariotte ; density of the gases ; bodies floating in gas ; motions of gaseous bodies ; motions in conduit tubes ; flowing through orifices in their partitions, and through pipes ; shock of the gases against solid bodies ; machines and apparatus, the play of which is founded upon the properties of the air ; use of the gases in transmitting and modifying forces ; of the wind as a moving force ; of air, considered as the vehicle of sound.

Second Year.

Of heat.—Sensible caloric ; radiated caloric ; laws of radiation ; influence of surfaces ; equilibrium of temperature by exchange ; propagation of heat through bodies ; laws of the diminution and increase of heat ; latent caloric ; expansion of bodies ; vapor ; hygrometry ; specific caloric ; phenomena developed in the changes of state of bodies ; measure of temperatures ; sources of heat ; sources of cold.

Fuel.—Combustibles employed for fuel ; calorific powers in weight and volume ; radiating powers ; motion of hot air in conduit pipes ; laws of the motions in having no regard to friction ; laws deduced from observation ; influence of superior and infe-

rior partitions ; of the curvature of pipes ; of lateral openings ; effect produced by the meeting of currents.

Of chimneys.—Elements which determine their dimensions ; law of the cooling of the air in chimneys ; determination of the minimum diameter of a chimney ; the most favorable dispositions for augmenting the draft ; construction of shop and house chimneys ; influence of the state of the atmosphere upon the draft of chimneys ; apparatus designed to secure the draft of chimneys from the influence of the winds.

Steam Boilers, apparatus of supply, apparatus for safety, furnaces, hearths, grates, pipes of circulation, chimneys, registers, form of the different apparatus in use.

Simple distillation, by an open fire, in the open air, with pressure, by steam ; rapid distillation ; distillation with analysis of vapors ; double distillation.

Spontaneous evaporation ; by a current of forced air ; by fire in open vessels ; by hot air ; by steam and by baths of hot oil ; double apparatus ; evaporation in the open air, spontaneous or by heat.

Drying in free air ; by hot air ; by contact with steam pipes ; by a current of air put in motion and dried ; drying of pulverised matters ; drying in the open air.

Heating by the gases ; ventilation of habitations ; warming by combustion direct ; internal warming by stoves ; warming of the air by radiation ; pipe stoves ; hot air calorifers ; steam calorifers ; hot water calorifers ; comparison of the different modes of warming.

Heating of liquids ; direct heating ; heating by steam.

Heating of solid bodies.

Cooling of bodies ; ice houses ; frigorific mixtures ; ventilation by cold air.

Health apparatus for unhealthy factories.

Light.—Transmission ; reflection ; refraction ; dispersion ; coloring of light in passing through thin laminæ ; inflection ; double refraction ; polarization ; luminous meteors ; vision ; optical instruments ; construction of lenses and mirrors.

Lighting.—Combustibles employed in lighting ; examination of flame ; lighting by solid materials ; lighting by liquid materials ; lamps, different forms of tubes, different arrangements of reservoirs of supply ; hydrostatic lamps, mechanic lamps ; lighting by gas ; comparison of the different modes of lighting ; apparatus for modifying lights ; glasses ground or colored ; reflectors ; lens apparatus ; lighthouses ; flint and steel.

Electricity.—General phenomena ; inequality of the conducting power of bodies ; electricity developed by rubbing two bodies together is of a different nature in each of them ; law of electrical attractions and repulsions ; causes of the dispersion of

electricity ; electricity is retained on the surface of bodies by the pressure of the air ; relation of the spreading of electricity to the curvature of the surface ; action of points ; development of electricity by influence ; explanation of the attractions and repulsions of electric bodies ; explanation of the electric spark ; electrical apparatus ; electrical machines ; electrophorus ; condensers ; electroscopes ; effects produced by electrical explosions ; electrical light ; atmospheric electricity ; causes of the electricity of the air ; effect of thunder ; lightning-rods, their construction ; different causes of the development of electricity.

Electricity developed by contact.—Piles, different forms ; effects owing to distribution ; effects owing to currents ; ignition and fusion of bodies ; chemical effects ; influence of currents upon the magnetized needle ; action of currents upon one another ; action of the earth upon moveable conductors traversed by currents ; explanation of the action of currents upon load-stones, and of the former among themselves ; development of electricity in chemical actions ; application to the preservation of metals, and for preventing saline deposits in conduit pipes.

Magnetism.—General phenomena ; poles ; communication of the magnetic virtue ; distribution of magnetism in a magnetised bar ; terrestrial magnetism ; declination, compass ; inclination, dipping needle ; magnetic intensity, instrument to measure it ; distribution of magnetism on the surface of the globe ; variation of inclination, of declination, and of intensity ; different processes of magnetizing.

Constructions.—The pupils will have to draw the following constructions :

Balances 1 ; lightning rods 2 ; shop chimneys 2 ; apparatus for steam 4 ; apparatus for distillation 4 ; apparatus for evaporation 4 ; driers 2 ; gas warmers 6 ; warming by liquids 2 ; warming by solids 1 ; ice-houses 1 ; apparatus for health 4 ; lighting 2. Total 35.

Manipulations.—In order to facilitate the understanding of the facts or of the phenomena studied in the course of natural philosophy, the pupils will be required to execute numerous experiments. The pupils will be required to erect large apparatus calculated by them with given conditions. They will subject them to various trials, in order to verify their calculations.

During the continuance of this course, the professor will question the pupils at the end of the lesson. The adjunct professor will have, besides, two interrogatories a week. At the close of each year there will be a general examination.

Course of Practical Mechanics.

By M. Bécot—Civil Engineer, former pupil of the Polytechnic School, Ex-Professor in the School of Application of the royal corps of the army list, &c. M. Didiez, Adjunct Professor.

The instruction in mechanics has been divided into two grand sections. The one comprehends all the lessons of the first year, and a portion of those of the second ; and embraces the study of theoretical mechanics, that of the elementary mechanisms of machines, and that in fine of the moving forces of the auxiliary machines of most mechanic arts. The other section of the course is reserved to the study of the arts, which, in order to make the materials upon which they are exercised undergo the necessary operations, make use of particular machines more or less complicated. In this part will be found much apparatus described in the first ; but then it will be sufficient to point out their use, and the modifications of form and dimensions which they must undergo, for any particular object proposed. Notwithstanding these frequent and inevitable repetitions, it has been thought that the pupils will acquire a precise idea of practical mechanics, only in proportion as they shall be furnished with precise instructions upon a great number of mill-works, in such manner as to familiarize them, on every occasion, with the use of the known apparatus.

First Year.—First Section.

Equilibrium and play of simple machines.—Inclined plane ; wedge ; levers ; pulleys ; pulley blocks ; windlasses ; capstans ; screw.

Resistance of the materials employed in the construction of machines.—Resistance of wood, of cast iron, of wrought iron, of steel, of copper, of lead, of pewter, of zinc, of chains, of cordage, of bands, of straps of leather, &c. To traction ; to bruising ; to bending ; to transverse rupture ; to interior pressure ; to torsion ; to the shock ; to friction ; to wear, &c. Measure of adhesion, of friction, and of the rubbing of cords. Influence of these resistances in conditions of equilibrium, and upon the motion of simple machines

Transformation of motions.—Elementary mechanisms, by the aid of which the different kinds of motion may be converted into each other :—Rectilinear progressive ; rectilinear alternate ; circular progressive ; circular alternate ;—whether these motions are subject to intermissions, or act with continuity.

For the purpose of rendering the constructions relative to these mechanisms more useful, care will be taken to preserve in the latter the appearance and the destination which they have in the machines from which they may be taken.

Of active moving powers.—Of the measure of dynamic effect in general. Of forces ; of the law of forces ; of the *metrolitre*. Measure of the dynamic effect possessed by the turning shaft of a receiver.—*Bridle, dynamometer, dynamometric balances*. Measure of the dynamic effect consumed by the labor of whatever

machine. Dynamometrical cord. Of man applied to a crank ; to a peg wheel ; to a drum ; to tread wheels ; to trenching and digging down ; to carrying ; to drawing. Of horses and oxen applied to drawing in teams and in carriages ; or acting by their weight upon inclined planes and oblique moveable circles. Of springs and of heavy bodies considered as depositories of mechanical powers. Of *fly wheels* considered as regulators of the motion of machines.

Removal of loads.—Jacks ; crabs ; cranes ; capstans ; windlasses ; rowel machines ; drags.

Exertion of pressure.—Wedge presses ; cylinder presses ; screw presses ; percussion presses ; lever presses ; hydraulic presses.

Exertion of percussion.—Rammers.

Elevation of water.—Bucket wheel ; drum ; (*noria*) ; chain pump ; screw of Archimedes ; centrifugal force machine ; machine of Verra ; machine of Vialon ; hydraulic reed ; forcing pumps ; suction pumps ; forcing and suction pumps ; bellows pumps ; rotatory pumps ; fire engines.

Displacement of gases.—Blowing machines ; air pumps ; bellows ; ventilators ; trumpets.

Weights and measures.—Balance, steelyard, lever-balance ; calculator ; perambulator ; watches ; clocks ; timepieces.

Second Year.

Continuation of the First Section.

Of Water as a moving force.—Measure of the velocity, expenditure and force of currents of water ; undershot wheels with plane floatboards hanging, moved by impulsion ; undershot wheels with plane floatboards inclined, moved by impulsion ; undershot wheels with curved floatboards inclined, moved by pressure ; breast wheels with paddles and with buckets ; overshot wheels with buckets ; oblique wheel ; shell wheel ; spiral wheel ; reaction wheel ; tub wheels ; (*Danaïde*) ; chain wheel ; buckets ; float machine ; machine of Schemnitz ; water-column machine ; hydraulic balance wheel ; hydraulic ram ; hydraulic regulators.

Of the terrestrial atmosphere as a moving force.—Of the velocity and force of winds ; vanes with horizontal axis ; windmills with fixed and with moveable sails ; vanes with a vertical axis, and of their use as moderators in machines ; of atmospheric air dilated in the pyrealophorus.

Of steam as a moving force.—Generation of steam ; of boilers, and of the means of preventing their explosion ; measure of the mechanic power of steam ; of condensing engines ; single acting steam engines ; double acting steam engines, at high pressure with condenser ; double acting steam engine, by expansion without condenser ; double acting steam engine, by expansion

with condenser; of steam engines of many cylinders; of rotative steam engines; of moderators of steam engines; distributors of combustibles.

Particular applications of steam engines.—Of draining; of desiccation; of transportation upon iron rail-roads, by the aid of locomotive and fixed engines; of transportation by water, by the aid of steam boats and of engines for towing.

Of the gases and of vapors in general as moving forces.—Of the gases of powder in detonating machines, as fire-arms, mines, &c. Of the use of steam for throwing projectors. Brief history of steam engines.

Second Section.

Agriculture.—Ploughs, sowing machines, weeders, smoothing roller, machines for breaking down, straw-cutter, &c.

Millery.—Seives, fans; water mills on land and upon boats; steam mills; windmills; mills turned by animal power; by hand; bolts, kneading troughs, &c.

Lees, paste, vermicelli.—Grater, serge, rollers, drawing machine.

Wines, ciders, perry.—Presses, grinding mills, &c.

Oils.—Machines for pounding and bruising, for wringing, presses, &c.

Sugars.—Root-cutters, rollers, presses, &c.

Brick-making.—Machines for fabricating bricks, tiles, &c.

Rope-making.—Machines for fabricating and laying ropes, &c.

Spinning of hemp.—Systems of numbering the thread composed of elementary substances in general; machines for peeling, bruising, combing, spinning and twisting, reeling and winding, hemp and flax.

Cotton-spinning.—Machines for beating, picking, carding, roping, spinning and twisting, reeling and winding, cotton.

Spinning of raw wool.—Machines for breaking, picking, carding, spinning and twisting, reeling and winding, raw wool.

Spinning of combed wool.—Machines for combing, plaiting, spinning and twisting, reeling and winding, combed wool.

Spinning of cashmere.—Machines for combing, carding, plaiting, spinning, twisting, reeling and winding, the cashmere.

Silk spinning.—Machines for drawing, twisting, joining, reeling and winding, of silk.

Fabrication of webs.—Machines for warping, sizing, and weaving, of plain, quilted, diapered, and figured stuffs.

Stocking weaving.—Machines for stockings and for various knit webs.

Fabrication of laces.—Machines for flat and round laces, &c.

Net-work.—Machines for making nettings, tooth-lace, tulle, &c.

Fabrication of felts.—Saddle-bows, fullers, machines for shaving the fur from the skins.

Cloth dressing.—Scourers, squeezers, dash-wheels, fulling-mills, nappers, shearing machines, brushers, tenter-bars, stretchers, presses, calenders, cylinders, &c.

Impressions.—Machines for engraving on plane and cylindrical surfaces; machines for printing by application and in relief; copperplate presses; printing presses, mechanical compositor; lithographic presses.

Fabrication of papers and pasteboard.—Grinding mills, cylinders, twisters, moulds without end, &c.

Imitations.—Pantograph, prosograph; instruments for designing perspective; telegraphs, semaphorus.

Sawing.—Machines for sawing wood, for pointing stakes, for sawing stone, marble, &c.

Polishing.—Machines for polishing glass, optical glasses, &c.

Pulverisation.—Machines for bruising plaster; bark mill; madder mill; powder mills; mills for pulverising bones, for grinding ores; machines for braying.

Planing.—Machines for planing woods for painting, for raising mouldings, for making inlaid floors.

Fabrication of metals.—Trip-hammers, sledges, hammers, rolling and slitting mills, foundries, shears, wire-drawers.

Use of the metals.—Machines for fabricating nails, pins, needles, metallic cloths, lead pipes without seam; machine for cutting files; machine for making the Vaucanson chain.

Card making.—Machines for smoothing the leather, for pricking, for bending, and for setting.

Machine making.—Turning lathes; machines for planing, boring, fluting, and filleting; platforms for dividing and cutting gearings; (*alésours*); whetstones; carving tools.

During the course of Mechanics, the professor will question the pupils after each lesson; the adjunct professor will have, on his part, two interrogatories a week. At the close of each year, there will be a general examination.

The pupils will have at their disposal a certain number of machines which they will have to put up and take down, to operate, and to submit to such trials as will enable them to estimate their useful effect. They will execute in general all the experiments necessary for learning what modifications must be given to the results of theoretical mechanics, for the purpose of rendering them usefully applicable to the construction and establishment of machines.

Meetings will be proposed to the students for accomplishing them in the application of the notions which they have acquired, relative to the composition or modification of machines, and to

the organization of mill works and manufactures, according to given programs.

Constructions and labelled sketches.—We state neither the number nor the nature of the constructions and labelled sketches relative to the course of practical mechanics, because the pupils ought to be able to design all the machines described to them. These machines will be studied so much the more in detail, as their utility shall be greater, or their use more extensive. The pupils will always have to execute at least a hundred and sixty designs relative to this course.

Course of Chemistry and Chemical Arts.

By M. Dumas.—Private tutor at the Polytechnic School, Professor at the Atheneum, &c. M. Bergouhnioux, Adjunct Professor.

Chemistry, as a science, offers a field so vast and so varied, it presents in its applications, details so numerous and so important, that it is thought necessary to point out the general march of this instruction, in order to show in what sense it has appeared necessary to direct it, for the purpose of preserving to it all its severity without making it lose its extent.

The first year is devoted to general chemistry. The useful bodies alone are studied, but these are studied under all points of view, and serve to justify or to demonstrate the general rules of the science. The pupils are called to repeat all the experiments, even those which require instruments of precision. For this purpose, they are provided with balances; they make themselves graduated tubes, &c.

The second year is reserved to the chemical arts. An attempt has been made to class them under a determinate order by their mutual dependence; but little importance is attached to this order. That which fixes above all the range of study of these arts is, the progress of the other courses of the school. The arrangement is to give examination to these arts in proportion as the pupils receive in the other courses the knowledge of which they have need, or indeed in proportion as the knowledge of these arts becomes useful to them in regard to their other studies.

The instruction of chemistry and the chemical arts is divided into four parts; 1, lessons of theoretical chemistry; 2, lessons relative to practical chemistry; 3, manipulations performed by the pupils; 4, designs of apparatus or mills, laid down by them after certain models, or composed at the meetings from their notes.

First Year,

General Chemistry.

Definition of chemistry; nomenclature; examination of simple bodies not metallic; proportional numbers, atomic theory; study of the forces which determine chemical phenomena; natural clas-

sification of bodies ; study of compounds not metallic, divided into neutral, acid, and basic compounds ; examination of the metals ; compounds formed by the metals among themselves, or alloys ; metallic oxides, chlorides, iodides, sulphurets, &c. ; salts ; recapitulation of the preceding lessons, comparison of bodies among themselves, under the relation of their differences or of their resemblances, and demonstration of the natural affinities of each group ; analysis of gaseous compounds or mixtures ; analysis of liquid and solid compounds or mixtures ; general notions of organic chemistry ; elementary analysis of organised bodies ; general classification of bodies into acids, alkalis and neutrals ; organic acids ; organic alkalis ; sugar, gum, starch, wood ; alcohols and ethers ; fat bodies ; coloring matters ; essential oils ; resins ; animal substances ; recapitulation of the course, comparison of organic substances among themselves, demonstration of the relations which have served as the basis to their classification ; general process of organic analysis ; means of separating organic matters from each other ; methods for separating from them the mineral substances which are mingled or combined with them.

Second Year,
Chemical Arts.

1. *General notions.*—Combustibles, heating, lighting ; use of water, dissolutions, crystallizations, washing ; mineral waters both natural and artificial.

2. *Chemical products.*—Extraction of sulphur and its purification ; fabrication of sulphuric acid ; extraction of marine salt ; fabrication of the sulphate of soda ; of artificial soda ; of the soda called natural ; fabrication of crystals of soda, of the salt of soda ; preparation of hydrochloric acid ; of chloride in quantities ; of chloride of lime ; fabrication of potash ; of saltpetre ; of gun-powder ; of nitric acid ; of alum ; of the sulphates ; of magnesia, copper, iron, &c. ; fabrication of glacial sulphuric acid ; products of the distillation of animal substances ; animal carbon ; hydrochlorate of ammonia ; fabrication of Prussian blue, and of the prussiates.

3. *Matters for cementing.*—Making of plaster ; of raw and hydraulic lime, of mortars, cements and grubstone mortar ; essay on building stones.

4. *Potteries.*—Making of bricks ; of crucibles ; of tiles, square bricks, &c. ; of crockery ; of pipe-clay ; of stone ware ; of porcelain ; application of colors in the various classes of pottery ; preparation of these colours.

5. *Glasses.*—Making of bottle-glass ; of common glass with potash base ; of common glass with soda base ; of crystal ; of strass ; of enamels ; application of colours in the various kinds of glass ; preparation of these colours ; colouring of vitreous bodies in the mass ; painting on glass.

6. *Working of the metals.*—General principles of metallurgy ; extraction of bismuth ; of tin ; of zinc ; of antimony ; of lead ; of copper ; of mercury ; of silver ; of gold ; of platina ; of iron ; of casting and its varieties ; of steel and its varieties ; general considerations upon the influence which the mode of treating iron ores, their nature, and that of the combustibles, exercise on the quality and the quantity of the product ; general notions on the making of alloys in quantities ; bronzes ; brasses ; printing types, &c. ; refining of the precious metals ; application of metals upon metals ; art of gilding ; silver plating ; tinning of copper and iron ; metallic mohair ; tinning of glasses ; gilding of woods, of skins, of papers, &c.

7. *Vinegar and products which depend thereon.*—Making of vinegar by fermentation ; by the distillation of wood ; making of verdigris ; of verditer ; of the acetate of lead ; of Dutch white lead ; of the white lead of Clichy.

8. *Of sugar and of the products analogous.*—Making of sugar from red beets ; of starch ; making of wine, of cream of tartar, and of tartaric acid ; making of beer ; of cider ; extraction of alcohol and of brandies, of rum, &c.

9. *Of fat bodies and of their products.*—Extraction of oils, tallow, &c. ; making of candles, wax lights, &c. ; making of soaps.

10. *Colours and dyes.*—General processes of dying ; properties of materials to be dyed ; hemp or linen, cotton, wool, silk, and leather ; bleaching of linen and cotton ; discharging of the oil and grease from wool ; discharging the grease from silk ; dying red ; yellow ; blue ; black ; mixed colours ; application of the process of dying to various matters, under their various forms ; impressions upon linen and woollen cloths.

11. *Of the graphic arts, under a chemical point of view.*—Colours employed in oil painting ; in miniature ; in water colours ; in chalks ; in pastels ; fabrication of paper hangings ; preparation of the colours in use in the graphic arts ; general processes of printing ; of engraving in black ; of engraving in colour ; of lithography ; fabrication of pasteboard and of various sorts of paper.

12. *Various arts.*—Extraction of the essential oils, preparation of varnishes ; art of tanning ; hat making ; preparation of gelatine and of glues ; manufacture of tobacco.

Manipulations.—Each week, the pupils will be set to repeat themselves the experiments made in the lessons. They will have besides special lessons for learning to blow glass and making all the instruments of the laboratory.

Moreover, the pupils will construct themselves certain apparatus of fabrication on a large scale, and will make them operate. They will be introduced into factories, in order to study the various kinds of industry which are the object of the course.

In the particular design of the school, it has been thought indispensable to multiply the manipulations: thus they will be four times more numerous than those of the polytechnic school.

Constructions.—The pupils will have to execute the following constructions.

Apparatus for general chemistry	4	of mercury - - - - -	1
Making of charcoal from wood	1	of silver - - - - -	2
Preparation of gas for lighting	2	of gold - - - - -	2
Preparation of artificial mineral		of platina - - - - -	1
waters - - - - -	2	of iron - - - - -	10
Extraction and purification of		Fabrication of steel - - - - -	2
sulphur - - - - -	1	of mould casting - - - - -	2
Making of sulphuric acid - - -	2	of bronze - - - - -	1
Extraction of marine salt - - -	4	of brass - - - - -	1
Preparation of sulphate of soda -	1	Refining of the precious metals -	1
of artificial soda - - - - -	2	Making of tin-plate - - - - -	1
of natural soda - - - - -	1	Art of gilding - - - - -	1
of the salt and crystals of soda	1	Tinning of glasses - - - - -	1
of hydrochloric acid - - - - -	1	Making of acetic acid - - - - -	1
of chlorine and the chloride of lime	1	of verditer - - - - -	1
of potash - - - - -	2	of white lead - - - - -	1
of saltpetre - - - - -	1	of sugar from canes - - - - -	2
of gunpowder - - - - -	3	of sugar from beets - - - - -	4
of nitric acid - - - - -	1	Refining of sugar - - - - -	4
of alum - - - - -	1	Making of starch - - - - -	1
of glacial sulphuric acid - - -	1	Preparation of wine - - - - -	1
of plaster - - - - -	1	of beer - - - - -	1
of limes, mortars or cements -	2	of cider - - - - -	1
of bricks - - - - -	1	of spirits - - - - -	4
of tiles or square bricks - - -	1	of oils - - - - -	1
of crucibles - - - - -	1	of tallow - - - - -	1
of crockery - - - - -	1	Making of candles - - - - -	2
of pipe clay - - - - -	2	of wax lights - - - - -	2
of stone ware - - - - -	2	of soaps - - - - -	4
of porcelain - - - - -	2	Apparatus for dying - - - - -	10
of bottle glass - - - - -	1	for printing upon stuffs - - -	9
of window glass - - - - -	1	for making paper hangings - -	6
of crystal - - - - -	2	Making of paper - - - - -	4
of enamels - - - - -	1	Extract of essential oils - - -	1
of strass - - - - -	1	Tanning - - - - -	4
Painting upon glass - - - - -	1	Hat-making - - - - -	2
Extraction of bismuth - - - - -	1	Distillation of animal matters -	1
of tin - - - - -	1	Prussian blue and prussiate -	1
of zinc - - - - -	1	Gelatine and glue - - - - -	2
of antimony - - - - -	1	Manufacture of tobacco - - - -	2
of lead - - - - -	4		
of copper - - - - -	2		
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During the whole of the course, the pupils will be examined by the professors at the end of each lesson. The adjunct professor will have two interrogatories a week. At the end of each year, there will be, besides, a general examination upon the whole course.

Course of Analytic Chemistry.

By M. Bussy, former Pupil of the Polytechnic School, Professor at the School of Pharmacy.—*M. Bergouhnioux* Adjunct Professor.

First Year.

When the pupils shall be sufficiently advanced, materials will be given them to analyse. The composition of these materials being known by the professor alone, the pupils will give their results, and marks will be assigned to each of them, according as they shall have more or less approached the truth. These lessons, which will take place in the latter part of the course, will have particularly for their object the study of the general principles of chemical, mineral, and organic analysis.

Second Year.

The different methods of analysis, easily applicable to the wants of industry and commerce, will be explained. The pupils will be required to execute all the experiments necessary to the understanding of the processes employed in the chemical arts, all the trials by which the value of the products in use in these arts can be fixed, in fine to make the complete analysis of the various materials of important use. These processes of analysis and the manipulations which relate to them, will be arranged in such a manner as to present in one single group all that has relation to the operations of the same industry.

Course of Working the Mines.

By M. Bineau, former Pupil of the Polytechnic School, Engineer of Mines.

In this course the various species of minerals will be made known, the appearances in which they are found in the bosom of the earth, and the means that may be made use of, in order to extract and work them.

It will be divided into two parts. The first will include the principles of mineralogy and geology, and the general methods of working. The second will comprehend the complete study of the species employed in the arts, their mineralogical characters, their direction, and the mode of working which is proper to them.

First Part.

1. *Mineralogy*.—Notions of crystallography; determination of the species of minerals; scientific classifications; enumeration of the species, their summary description; 2. *Geology*.—Of rocks, and of their structure; stratification of grounds; successive appearances of organised beings in the different geological stages; division of grounds into different classes; enumeration of the grounds in the order of superposition; theories upon the formation of the earth. 3. *Working*.—1. Search of mines; cuts, pits, and galleries, sounding; search of subterraneous waters, artesian wells.—2. Means of making trenchings, utensils, and powder.—3. Working in open air.—4. Working by pits, and galleries; veins, beds, and masses.—5. Timbering; resistance of woods; timbering of pits in quick sands, and grounds penetrated with water; timbering of galleries.—6. Walling, strengthening with

plank in curb. 7. Transportation of the ores in the interior of the mines; the raising of them out. 8. General principles of the mechanical preparation of ores.

Second Part.

Description of all the mineral species employed in the arts; their position, their extraction, their uses. Examples will be given drawn from mines the most celebrated and best worked. 1. Stones employed in jewelry; means of cutting, of polishing them, of estimating their value. 2. Polishable rocks; stones employed in constructions. 3. Minerals which are used in making glass, porcelain, crockery, potter's ware, and bricks; minerals which are employed as solvents in the metallurgic arts. 4. Mineral materials employed as manures in agriculture; minerals made use of in design and painting. 6. Metalliferous ores; the mechanical preparation of them. 7. Combustibles, anthracite, lignites, bitumens, and turf.

Constructions.—The pupils will have to execute the following constructions 1. Crystallographic figures; general geological section; details of this section relative to the grounds which contain the principal metalliferous locations, the combustibles, and the saliferous masses; particular sections proper for making known the manner of existence of veins, masses and deposits. 3. Design of boring and of its different utensils. 4. Sections representing the various modes of working. 5. Designs relative to the timbering and walling of galleries and pits; model of tooth-ing and of picketing. 6. Disposition of an iron railway in the interior of a mine. 7. Tubs and cars which raise the ore out. 8. Machines for braying; grinding mill, cylinder machine; machines for washing, (*patouillet*), stationary trough, rocking trough, rocking sieve. 10. Cutting of precious stones; cutting of gun flints.

During the whole course the pupils will be questioned by the professor at the end of each lesson. At the end of the year, there will be, besides, a general examination upon the whole of the lessons.

Course of Practical Natural History.

By M. Ad. Brongniart.—Doctor of Medicine, Fellow of the Faculty of Paris, &c.

This course will have for its end, to make known all the organized beings, which, by themselves or by any of the substances which they produce, are employed in the arts of industry.

They will examine the characters which distinguish these beings, their origin, the diverse varieties important to be known which they present, the cares which they require, their mode of culture or of bringing up. When only one part of these beings is used in the arts, the organization of that part will be studied in such manner as to give an account of the mode of formation

of the useful substance, and of the means by which its quantities may be augmented, or its qualities perfected; in fine, the endeavour will be to determine what are the processes by which these substances may be obtained in the most economical manner possible.

This course will comprise two parts, wholly distinct; the one will have for its object, vegetables and their products; the other, the animals, and the materials they furnish.

First Part. *Of Vegetables.*

Organization and intimate structure of vegetables, functions of these beings, and mode of formation of the various substances which they contain. Of their culture in general.

Classification, distribution by natural families, characters and properties of the most remarkable families.—Special history of the vegetables and vegetable substances employed in the arts.—Wood considered in regard to constructions, to the fabrication of machines and instruments, to heating, and to carbonization; textile materials, and those suitable for making paper; starchy substances; gums; substances containing sugar and alcohol; oils, vegetable wax, &c.; tobacco; resin, resinous gum, caoutchouc, &c.; tanning matters; alcaliferous substances, opium, quinine, ipecacuanha, &c.; preservation of vegetable matters.

Part Second. *Of Animals.*

Organization and functions of animals.—Of the various substances which compose them, and of their mode of formation.—Classification of animals and comparative organization of the principal classes.—Special history of the animals and animal substances employed in the arts.—Animals considered under the relation of their mechanical action.

Animal Products.

Hair, wools, horse-hair, &c.; feathers, down, &c.; silk; peltries and furs; skins, parchment; catgut; animal glues; greases, white and whale's; wax; honey; colouring matters; cochineal, kermes, lake, sepia, &c.; preservation of animal matters.

Constructions.

Constructions.—The pupils will be exercised in copying designs representing the points the most important to be known, of the organization of vegetables and animals, or the characters and structure of the substances employed in the arts.

At the end of the course, all the pupils will be examined by the professor, who will, in addition, during the course, hold many examinations, in order to ascertain the progress of the pupils.

Course of the Art of Building.

By M. Goublier.—Architect of Public Works, Recording and Corresponding Secretary to the Council of Civil Edifices.

The object of the course is,—1, to procure for the pupils a general knowledge of the art of arranging, executing, and valuing the constructions, which the exercise of the different indus-

tries may render necessary ; 2, and to serve as preparatory studies for those who are specially designed for the exercise of the art of building, whether as architects or civil engineers, or as builders or undertakers of building.

As these last must necessarily study more particularly the different objects of this course in a third year, the professor will give to each of these objects those developments only which are useful to the great body of the pupils.

This course will be divided into several parts, of which this is an index :—1. Of the materials which are employed in constructions.—2. Of the preparations which they undergo.—3. Of the various parts of constructions.—4. Of the laws of edifices.—5. Of the manner of reckoning, measuring, and estimating constructions.—6. Of the arrangement of constructions.—7. Of the execution of works.

1. *Of the materials which are employed in constructions.*—§ 1. Materials taken from the vegetable kingdom.—Wood ; thatch, reeds, &c.—§ 2. Materials drawn from the mineral kingdom.—Minerals, earths, sands, pebbles, puzzolanas, plaster, buhrstone, rubblestone, stones, freestone, granite, marbles, slates, &c. Metals—iron, copper, zinc, lead, pewter. In regard to these different matters, their physical and chemical qualities will first be described, so far as particularly concerns the art of building, according to what has been taught in the course of mineralogy, natural history, natural philosophy, and chemistry ; these will be given besides an introductory sketch of their principal uses.

2. *Of the preparations which these materials undergo.*—§ 1. Before being delivered to builders. 1. Operations merely manual or mechanical.—Cutting and sale of woods ; extraction of earths, sands, minerals, and metals. 2. Operations, manual and mechanical as well as chemical.—Making of bricks, tiles, and paving bricks ; of artificial puzzolanas ; of plaster, and of lime. For all these operations the course will be confined, as far as possible, to rehearsing succinctly what has been taught in the courses of descriptive geometry, chemistry, mechanics, &c.

3. *Of the various parts of constructions.*—§ 1. Of the foundations.—1. of the knowledge of the various species of soil.—2. Of the means of remedying their compressibility.—3. Of the execution of the labours of removing and filling up.—4. Of the execution of the foundations.—5. Of terrace-walls, or walls of support.—6. Of cellar vaults.—§ 2. Of constructions above ground.—1. Of vertical constructions in wood, in pisé, in masonries of rubblestone, buhrstone, bricks, stone, &c.—2. Of horizontal constructions, areas, pavements, brick pavements, slabbing, &c.—Floors of wood, of wrought or cast iron. Terraces in stone, bitumen, metal, &c.—§ 3. Of the various species of roofs, as well in relation to their disposition, as to their construction, their spreading, &c.—§ 4. Of shelters.—1. Of ridge-

roofs of wood, of iron wrought or cast.—Of shelters properly so called, in thatch or reeds, in wood, tiles, slates, metal, &c.—§ 5. Of stairs in wood, in masonry, &c.—§ 6. Of preparatory works. Scaffoldings, arch-moulds, props, shoars, &c.—§ 7. Of the use of iron for contributing to the solidity of constructions in wood and masonry.—§ 8. Of accessory works.—Joinery, locksmithery, painting, glazing, &c.—§ 9. Of hydraulic constructions.—Of canals, basins, reservoirs, aqueducts, wells, and in particular of artesian wells.—§ 10. Of bridges of wood ; of iron ; of masonry. Of bridges suspended by iron chains.

4. *Of the laws of edifices.*—§ 1. As to what concerns the relations with the public authority.—Of the laws, regulations or usages, relative to the working of various materials, and to the various fabrications of which they are susceptible.—To the laying out upon the public way, to the conditions required in regard to the solidity of constructions, to their height, &c.—To the conditions relating to rivers and water courses.

§ 2. As to what concerns the relations with individuals. Of services ; of the right of enclosure ; of the laws of vicinage ; of partition walls ; of prospect upon neighbouring property ; of the distances on vacant spaces which may be exacted in certain cases ; of what relates to waters and to plantations ; of the guaranty of constructions ; of reparations of tenants ; of leases and rights of occupancy, reports of reviewers, and arbiters, &c.

5. *Of the manner of reckoning, measuring, and valuing constructions.*—Of works which may be reckoned by the piece ; of those which may be estimated whether by linear measure, or by the surface, or by solid contents ; of the principles of measurement, and of different usages which are more or less generally admitted in it ; of valuing, and of the fixing of prices ; of the digesting of plans and memoirs.

6. *Of the distribution of constructions.*—Of the preliminary digestion of a program pointing out the destination of the constructions, the various parts of which they are to be composed, the disposition and size which they must have, the number of individuals or of various objects which they must be able to contain ; and in general of the various data which it is necessary to satisfy. Of the general principles which should be followed in the disposition of constructions, as well to satisfy the data of the program, as to obtain all necessary solidity and all possible economy.

Of the execution of the works.—Of the various modes of execution.—By superintendence according to the expense in labourers' days' works, and materials.—At the lowest price by the piece or by measure.—By contract or by the job.—At established prices.—Of the advantages and disadvantages of these different modes of execution.—Of the measure proper to be taken in order to secure these advantages, and to prevent or diminish these disadvantages.—Of the clear, entire, and precise determination (in

case of prices fixed in advance, or of bargains by the job,) of the works to be executed, by means, 1. of plans, sections and elevations in sufficient number; 2 of a schedule of description and estimation; 3 and by a bill of the expenses of the execution.—Of the direction, conduct and superintendence of works.—Of the contestation, as the execution goes on, of works which do not remain apparent or accessible.—Of the examination, verification, allowance and estimation of works, after their accomplishment. The pupils will have to execute the following constructions : Machine for making mortar, 1.—Combination of carpentry, forms of out-houses, wooden fronts, floors, roofs, scaffoldings, arch-moulds, stair-cases, &c., 14.—Floors and roofs of iron, 5.—Vaults, arches, bridges, stone stairs, 10.—Ground plans, sections, and elevations of factories, 10.—Total, 40.

Course of Political Economy and Statistics.

By M. H. Guillemot.

Political economy may be considered under various points of view, and taught by many methods, according as it is proposed to form publicists, legislators, administrators, merchants, or manufacturers.

The end, wholly special, assigned to the studies in the central school of arts and manufactures, excludes the transcendental theories, and comports only with teaching doctrines immediately applicable, and above all controversy. Such is also the predominant idea of the course of political economy and statistics, and the basis of the plan which the professor proposes to follow.

This plan, conceived according to the very order of the successive development of the operations of industry, admits three principal divisions, under which all the subjects of instruction arrange themselves.—The conception and establishment of a manufacture.—2. The working of it.—3. The sale of the manufactured products.

First Division.

Elements of the general theory of industry.—Property of industry.—Laws instituted to guarantee or to modify it. Legislation of writs of invention, of patents, of establishments of industry considered as inconvenient, unhealthy, or dangerous.—Of capitals, and of their functions in the production of riches.—Of association and its effects.—General view of the various modes of societies of industry. Analysis of the circumstances which ought to influence the mode of working, and the choice of place for establishing a manufacture.

Second Division.

Division of labour, its principles and effects.—Nature and functions of the various agents of production.—Of workmen, of workmanship, and of salaries.—Laws upon the relations of masters and workmen, combinations, police of industry, &c.—Institutions of head-men (*prud' hommes*).—Of machines.—Of the

buildings and of the moveables of industry.—Of the funds for carrying on.—Principles of accountability in industries.

Third Division.

Circulation of products.—Functions of the various agents which distribute them in society.—Of the taking price and of the sale value.—Analysis of the elements of both.—Channels of disposal.—Various causes which determine their relative advantages.—Tariff laws.—Prohibitions.—Protective rights ; import duties, and excise on manufactured articles.—Drawbacks and premiums.

Without making the subject of a particular instruction, statistics will be constantly appealed to, in order to give to the general principles the irrefutable sanction of facts. Numerous documents drawn from the best sources, will be put into the hands of the students, from which they will be frequently exercised in drawing up computations, in making comparative calculations, and even in digesting memoirs upon various questions of political economy and statistics. The last lessons will be devoted to making known to them, by rapid views, the history and the comparative actual situation of the principal industries among different people, and the causes of their progress or of their decline.

Constructions.

For the purpose of engraving in the minds of the students the most positive and most important results of this course, they will be made to put into synoptical tables certain of the data of the statistics of France. There will be given them to colour, according to various indications relative to industry, maps of France disposed for this purpose. The pupils will best represent to themselves thus the distribution of combustibles, mines and great industries, upon the soil, which sooner or later they are to operate.

Course of Design.

By M. Leblanc.—Professor of Design to the Royal Conservatory of Arts and Trades.

From their entrance into the school, the pupils will be employed in executing certain designs with the scale and dividers. They will be taught the various processes of washing, there will be given to them certain models for chalking and taking proofs, in order to help them to the use of this convenient and expeditious process ; in fine, they will be exercised in sketching certain outlines from models, at first, and then from the machines, all the means being pointed out to them which permit of preserving, in this kind of rapid design, the vigour which seems particularly proper to finished designs.

The professor will inspect during the whole year the labors of the pupils; he will pass in the halls of study a part of the time devoted by the pupils to their graphic labors, Tuesday, Thursday, and Saturday, during the three first months.

The designs finished by the pupils will be revised by the professor. The marks given for these designs will enter into the general account of the pupils.

Accessory Lessons.

The adjunct professor will, during the first month of the year, give lessons of elementary mathematics, designed for the pupils whose preparatory studies shall have been too small. These lessons will take place in the evening, in one of the amphitheatres of the school.

There will be in the school a joiner's and a woodturner's shop, and one of a moulder and a turner in metals. Workmen will labor there the whole year under the eyes of the pupils, whether in constructing models for the collections of the school, or in making the pieces of machines ordered by the pupils in their exercises, or, in fine, in giving the pupils certain notions upon the handling of tools, the use of the forge, &c.

The pupils will moreover receive lessons carried through by a skilful blower of glass; in each laboratory an enameller's lamp will be placed at their disposal, in order that they may execute themselves, in their manipulations, all the parts of apparatus which can be done by them, and that they may replace those which shall come to be broken in the course of their experiments.

Complementary Courses of the Third Year.

Independently of the labors of which we have spoken, the pupils who shall design to become civil engineers, will follow, in the third year of study, courses of the differential and integral calculus, and of analytic mechanics, which shall complete their theoretic knowledge. M. Benoit will be charged with the course of analytic mechanics.

Education for Officers of the Navy.

[The following observations are extracted from Jones' 'Sketches of Naval Life.' They present some of the most important arguments for the establishment of a Naval School; and, we think, merit the attention of those to whom the most important interests of the nation are intrusted.]

'Until about ten years since, there were no examinations, and nothing was required for promotion to a lieutenancy, except the want of such an officer, and the belief that the candidate was a fit subject for it. At that time an order was issued from the Department that no one should be promoted till he had passed a satisfactory examination before a board of officers appointed for that purpose. There was no specified times for these examinations; but they usually came at the end of sev-

en years service as midshipman, and were soon followed by promotion. I am informed that they have done wonders for the Navy. A few months since another order, a very judicious one, reached us from the Department. The examination will now take place at the end of five years from the date of the appointment, three of which must have been spent at sea, in active duties: they are then to be styled "passed midshipmen," and with their pay increased six dollars and a ration, (or \$13 50,) they are candidates for promotion, which will usually take place at the expiration of two years. He who fails in two examinations, will be struck from the Navy list.

'All this is very good, but more is needed, and it will be felt before many years, if it is not seen. I discard the question of expediency, usually the topic, when the Naval School is brought up, and I say it is a duty we owe the country, and a duty becoming every day more imperative. Look at our land, and mark its interests rising as those of no land ever rose before, and look at those interests, spreading, interweaving themselves with the politics of every nation on the globe, and every day becoming more complicated and important: then look at our young officers, and think that when they grow up, and become the heads of our Navy, those interests will be committed to their care, requiring in each Captain, not only a well skilled commander but a wise and able statesman, and then tell me is it not pitiful to confine their studies to Bowditch's Navigator. I say *confine* their studies; for when you throw them upon the world, without opportunities of studying more, and require only this, you do in effect confine them to it: and not half of them have an opportunity of making themselves acquainted with this. Let us examine this book, the one put as a text-book into their hands, and used in their examination, and therefore placed before them as the great perfection of a navigator's knowledge. It is an excellent *practical* work, and does not pretend to more than this; but it is intended chiefly for captains of merchantmen, and he who uses it, wanders blindfolded through its labyrinths; for there is little attempt at explanation, except what is absolutely necessary. A little Geometry at the beginning, and an exhibition of the principles of the sailings, so blind that no officer, I have yet met with, could understand from it the two last and most important,—this is the book, the height of our officers' attainments, who, when they have finished it cannot even tell why they count half degrees for whole ones from their sextants at the meridian observation. It may be answered that this matters little, so long as they count the degrees aright. Sentiments like this have been avowed even on the floor of Congress, and it has been hinted too, that it matters little how ignorant they are, as long as they fight our battles well. Tell it not in Gath! or rather tell it to the world, and let it be said too, that we blushed then and did justice to this ornament of our nation and to ourselves. Let the voice of the Navy itself be heard. I know not what the older officers think on the subject, but I do know that among the rest the cry is universal for a Naval School, and that they feel keenly the preference shewn our army in the cherished and favorite institution of West Point. I have seen them, three successive winters, turn eagerly to the subject in the Secretary's reports and among the debates of Congress; and I have watched the merited burst of indignation at the petty schemes agitated in that body, and the illiberal remarks by which they were upheld. But let not Con-

gress take alarm, and fear a mutiny in the Navy; a Navy never yet proved treacherous to its country. Our best officers may be court-martialed for breaking the laws of nations, though they are allowed no means of studying national laws; and they may be compelled to go into foreign employ to escape from censures at home: Congress may talk about hiring our younger ones out to merchantmen and saving a few dollars by it: they may talk about retrenchment and economy, till speeches and days accumulate and the golden streams of the treasury flow largely on themselves; they may say all things illiberal, and I can assure them that the Navy will not complain. *But I hope the Nation will:* and it ought to. For, as I have already said, our interests abroad are daily becoming more important, and these interests must be committed to our Naval commanders. The duties of such an officer are indeed remarkably trying. In every port which he enters, he is as much the representative of our nation as is the Minister at its court, and all the high qualities of such a man, and often more than these are requisite in him. He is often called on to make treaties; to decide controversies involving probably the interests of a large portion of our merchants; he must penetrate artful schemes; must unravel and oppose the intrigues of cabinets; must in great and small matters support the honor of his country, and must often in these things act suddenly, yet with decision. A Minister has the advantage of residing among the people with whom he has to do, and can watch and study the progress of events. But a Naval Captain cannot. He enters a harbour, and a doubtful case is presented to him on which he has perhaps immediately to decide, and he must then adhere to his decision. If the nation supports him, it may perhaps be led into serious difficulty; if it does not, he must be censured, and probably a valuable and meritorious officer will be lost. How much is committed to the discretion of such a man. Which of these things is to be done by the army? I ask you which? Or what is to be done that will compare in importance with them? And yet we build for the army a liberal institution, and its praises are abroad in the land. Do not mistake me. I wish not to decry the establishment at West Point. It is a noble and useful one: it is honorable to the nation, and justly a favorite; but I mean to build on it some arguments for giving the Navy a similar one. Our army does not appear abroad: its officers are unknown there: foreign nations scarcely know that we have an army: but our Naval officers are every where, and every where affect most seriously the interests of our country. It is true that they have done much for these interests, but let it not be hinted that it was owing to the want of culture in those who did it. The slander has been said, and shame to them by whom it was uttered. But if it were true, the past is no rule for the future: our nation is changing its features every day, and what was admissible in the infancy of our Navy, may be ruinous in its manhood. This has already in some degree manifested itself. "*Quantum periculum sit * * suspicari de præterito quam re ipsa experiri est melius,*"* is a maxim useful as well for governments as for individuals.

'I will add a few more particular considerations. I have hinted at the early age in which officers are sent aboard ship, and have often

* (It is better to suspect the magnitude of the danger, from the past, than to bring it to the test of present experience.)'

regretted it. Yet it is an evil not to be avoided in the present system. The term of Midshipman lasts seven years; that of Lieutenant about fifteen; that of Master Commandant five, six, or seven, according to the necessity for higher officers. The last two of these terms will perhaps increase according to the increase of officers in our peace establishment; but at least twenty six years will have to pass from the date of their warrant before they can become Post-Captains, at present our highest rank. This is a long time, and accordingly they enter as young as possible. The consequence is, that if the lad is smart and agreeable, he becomes a favorite on board, is petted and spoiled. I omit to notice the vices that never fail to come under his observation. It is cruelty and worse to throw striplings among such scenes; to feed their pride with power over others, while to them discipline is relaxed; to give them up to the shining temptations of the gambling table; to make them familiar, with crime, before they suspect it is near them. It is making the nation a pander to vice, and the nation's rulers will have to answer for it. We boast of our schools, and our extensive distribution of knowledge; and those states are most applauded, which lay the surest foundation for a wise population; and all this is just. But why neglect most those who are the nation's charge, its adopted children, given up to it by their parents;—nay, worse than neglect them, give them a premium for ignorance, and bring them up so; and then look to them for honour. We have been too long in error. Let the nation extend a fostering care to those so early in life entrusted to it; let it inform their minds, and place a corslet over their hearts; teach them to consider their destined business as a science, as well as a trade; learn them to find resources in books; to think and reason; to feel at ease in society, and enjoy it, and the tavern and billiard room will cease to be their resort.

'But I would not have the institution I speak of only a school for lads: it would not meet half the necessities of the case. It should be on a liberal scale, like the one at West Point, and a spot around which our officers of all ranks, when at home, would gather for information and improvement. It is usual to give them leave of absence for several months, after a cruise like ours: sometimes this is extended to the period of a year or more: their first visit will of course be to their friends, and then, I have no hesitation in saying, half of them would turn to their Naval College, as the most agreeable way of spending time.* The benefit of all this would soon return upon the nation: our officers would not have to resort to the tedious, unsatisfactory, and often treacherous medium of interpreters, in their official transactions abroad. General science would be greatly promoted, and what to them would be of greater benefit, science in Naval matters would make a rapid advance. We are constructing docks; our dangerous coasts are not half surveyed; and the ten thousand complicated parts of ships, ship stores, and appurtenances are open to improvement. No one will say that in these, or any one of them, there is no room for improvement.

' " There have been four Naval officers attending the lectures, as much as circumstances would allow, in Yale College this winter; and I know of more who would have done it, if they could have found time. Of the Midshipmen in the Constitution, while I was on board, one had been a resident, while holding a warrant, at West Point, and three at Partridge's school.'

The very fact that improvements in the Navy have not kept pace with those on shore, would lead one to suspect that there is much room for improvement, and I do not hesitate to say that there is.

'I should say nothing about the expenses of such an institution, if economy were not such a favorite topic in our halls of legislation. Economy! As if a nation's happiness and prosperity consisted in having her coffers filled, and not in the well being, and intelligence, and enterprize of her citizens. Who would barter mental wealth for gold? Or who would refuse it for his sons for the sake of gold? Yes there are some but they are the selfish, the illiberal, the churlish; and they generally end with being the *contemptible*.

'I will only add, that till Congress provides a college for the Navy on a liberal and generous scale, it will be doing it a crying injustice.' pp. 63—70.

FROM THE ALBANY ARGUS.

Extract from a pamphlet upon the establishments for Public Education in Bavaria, Wirtemberg, and Baden.

The kingdom of Wirtemberg appeared to the author as one of the most generally civilized in Europe. Elementary education is universally diffused. All can read and write. The political condition of the inhabitants is also highly favourable, as almost every father of a family is a landed proprietor.

The following are some of the existing regulations concerning education in Wirtemberg:

1. There is an institution or college, in the vicinity of Stuttgard, for the instruction of school teachers. Here they are examined after passing through the required studies, and no one is permitted to take charge even of the most common school, unless he has a proper certificate. There is also an institution for instructing female teachers, in which are taught the ordinary branches of science, with needle-work and the art of cookery.

2. In every village or hamlet there is a school, and the master who directs it, has, as part of his salary, a house with a small garden annexed to it. Government fixes the amount of his salary, which is paid, if necessary, by a tax on the district. In large towns or cities, the number of schools is of course increased, according to the number of the population.

3. A law is in force requiring every child to be sent to these schools, females from the age of six to that of thirteen, and males from six to fifteen. If the parents can afford to pay the whole or part of the tuition, they are required to do so, otherwise the district.

4. The branches required by law to be taught, are reading and writing, grammar, arithmetic, and geography. Biography and history are also read.

5. In every district the clergy of all denominations act as superintendents or trustees over the schools. Religious instruction forms no part of the school education. This is intrusted to the respective clergymen, in consequence of the variety of sects to which the children belong.

6. All the children are annually examined before the above trustees, and whoever have remained the required time, and are found qualified, receive a certificate of the same. *Without this certificate*, no person under the age of 21 is allowed to be employed throughout the kingdom.

In Bavaria, a system of education greatly resembling that of Wirtemberg is pursued. Mr Hazzi, an enlightened patriot has composed a catechism of Agriculture, and has had influence enough with the government to induce them to order its introduction into all the schools. The science is also practically cultivated.

Every school has some two or three acres of land annexed to it, in which the scholars act as labourers—sowing various kinds of seeds—noticing the varieties of culture—and the phenomenon of vegetable physiology. A small garden spot is reserved for the female children to raise flowers.

Baden is no less favoured than the other countries in the general diffusion of elementary schools. Female instruction is particularly attended to. The elder scholars in the Female Academy at Carlsruhe study natural history, (and in particular botany,) astronomy, geography, the French and German languages, music and dancing.

Every traveller in Germany, notices the prevailing passion in that country for music, and the high perfection attained in it by multitudes of the population.

NOTICES.

Encyclopædia Americana : A Popular Dictionary of Arts, Sciences, Literature, History, and Politics, brought down to the present time, on the basis of the Seventh Edition of the German Conversations-Lexicon : And including a copious collection of original articles in American Biography. Edited by Dr. Francis Lieber, assisted by Edward Wigglesworth, Esq.—Philadelphia. Carey, Lee & Carey. Boston. Carter & Hendee, Agents for New England. Vol. 1. 8mo. pp. 616

The first volume of this very valuable work has just issued from the press.

From the Editor's Preface we extract the following account of it, and shall probably notice the work more at length in a subsequent number.

'In presenting this work to the public in the English language, my intention has been, by making such changes and additions as the circumstances of this country required, to render it as useful and acceptable to the general reader here as the

original is in Germany ; and I have cherished the hope, that the circumstance of its being an *American* encyclopedia, not merely in name, but as constituting an extensive repository of information relating to America, as well as to the various branches of general knowledge, would give it a peculiar value with that great European nation, whose language and literature are the common property of themselves and their descendants in the United States.

‘ In the title page, this work is stated to be formed upon the basis of the German *Conversations-Lexicon*; and if the reader will compare it with the original, and consider the numerous additions and corrections which have been made, I hope he will not find cause to charge this title with being too pretending. My idea of a good American encyclopædia has been, that it should contain, besides the most valuable portions of the English encyclopædias, and the topics of peculiar value to an American reader, information upon all subjects of general interest on the continent of Europe. The publishers have, with great liberality, supplied all the means and facilities which were desired by the editor. The trustees of the Boston Athenæum have obligingly allowed free access to their ample library, which does so much honor to the metropolis of New England. But, above all, I ought to acknowledge the zealous and able co-operation of my friend and associate, Mr. Wigglesworth, who will not permit me here to express my obligations to him in such terms as my feelings would dictate. With him I shall be happy to share whatever approbation the public may think the work shall deserve.

‘ Some of the departments of science and literature, which were but imperfectly treated in the original German work, have been entirely re-written for this edition ; for example, Zoology (by Dr. Godman of Philadelphia, author of the well-known *American Natural History*), Mineralogy and Chemistry. The departments of Political Economy and Geography have also been much enlarged. Numerous entire articles of American and English law have been introduced, and large additions made to the original articles on Jurisprudence, which, in the German work, are mostly confined to subjects of Roman, German, and French law. In General Biography, large additions have been made. The articles on *American* Biography are entirely original, and have been furnished by Mr. Robert Walsh, Jr., whose learning and taste are a sufficient pledge of their value. Their apparently disproportionate length may, with a foreign reader, require some apology ; but I persuade myself, that, with the American reader, the new and interesting information they contain will be deemed a sufficient reason for their not being further abridged. Such readers, too, will appreciate the value of many details of American history, which are not yet to be found, and could

hardly be entitled to a place, in a general work upon that subject. Besides the contributions of Mr. Walsh, many new and valuable articles have been written by distinguished American scholars, particularly in relation to their own country, and to other parts of the American continent. The biography of living citizens of the United States has, for obvious reasons, been omitted; but the reader will find an account of our most distinguished foreign contemporaries.'

Books for Children.

The Juvenile Miscellany.—Among the periodical publications for young persons which are particularly deserving of public confidence and patronage is the 'Juvenile Miscellany,' published once in two months by Putnam & Hunt of this city. It consists entirely of original matter from some of the most gifted among those who have devoted their talents to the improvement of youth. It is a very fascinating book for young folks; and to our certain knowledge many 'children of a larger growth' have condescended to find amusement and instruction in its pages. It contains stories both grave and gay—stories which contain their moral in them, instead of having it awkwardly appended to the conclusion—dialogues on life and morals; and on the various branches of physical science—sketches of natural history—biographical notices of distinguished men—translations from foreign juvenile works—and short pieces of poetry.

A publication of this sort could not fail to be popular if tolerably conducted; but sustained by some of the best writers in our country, and sustained too, with uniform spirit, it has become quite a standard periodical, a regular portion of the juvenile library. So long as it shall continue to be conducted with the same ability as heretofore, it will undoubtedly retain its popularity and continue to exert an immeasurable influence on the virtue and intelligence of the rising generation.

Biographical Sketches of Great and Good men. Designed for the Amusement and Instruction of Young Persons. Second Edition. Boston. Putnam & Hunt. 1829. 18mo. pp. 89.

These sketches are written by the gifted lady who conducts the Juvenile Miscellany, and have appeared at different times in that excellent work. They are very justly called 'Sketches,' as they present the most striking traits of certain distinguished individuals, and bear the same relation to regular works of biography that a pen sketch does to a finished portrait. They serve rather to awaken than to satisfy the curiosity of the young read-

er : and yet the anecdotes are so striking and piquant that they leave an impression which will seldom, if ever, be effaced, even when extensive subsequent reading has filled up the outline to which the mind's eye was early accustomed.

The Little Bird Teacher. Translated from the French.—**Little Edward.**—**The Little Rogue.**—John White and Albert Williams, or the Lapse of Twenty Years. A Tale. Boston. Putnam & Hunt, and Wait, Greene & Co. 1829. 18mo. pp. 16 each.

We are glad to see some of the most popular narratives contained in the *Juvenile Miscellany* selected and published separately, as it brings them within the reach of many little folks who cannot bear the expense of the entire work. The style of the stories before us, is plain and unambitious—well suited to the capacities of children ; and the incidents are well chosen and natural. It is curious to observe how everything that relates to the subject of education is feeling the pervading influence of improvement. Formerly books of this class and price were sure to be most contemptible trash—trifles in which the *mind* of writer or reader could have very little concern. But now the urchin who denies himself an orange, for the sake of possessing a book, is pretty certain to get his penny's worth. As a natural consequent, that important portion of capital called pocket money has found a new channel and the march of juvenile mind a new direction.

Sketches of the Wallington Family. Boston Wait, Greene & Co. 1828. 18mo. pp. 73.

This is apparently the effort of a juvenile mind ; but we have no hesitation in pronouncing it an uncommonly happy one. The descriptions are graphic, the conversations lively and natural, and the style not too colloquial nor too ambitious. If there be any deficiency it is in the management of the story, the most difficult part of invention and that in which many an experienced writer occasionally fails. The fine moral taste of this young writer and an evident talent for observation, afford a favourable presage of future success and usefulness.

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ART. I.—*Thoughts on Primary Education.—Elementary Instruction in the English Language.*

It is a matter of dispute among those who have reflected on the subject, what ought first to be taught to children. On this head it may suffice for the present to remark that we ought to follow nature ; in cultivating language, form, and number, simultaneously, or nearly so. Children are usually sent to school to learn the English alphabet, in the first place ; and this is the first thing usually taught. And here suffer me to observe, that it is my opinion, from the best evidence on the subject I have it in my power to obtain, that no child should be taught his letters at first. Whole words should be presented to his eyes in the first place, if we would teach understandingly, or follow the order of nature. The most familiar words should be given him, such as hat, head, eye, mouth, fire, book, candle, table, chicken, rose, &c. It is better not to give him words of more than two syllables. These should be read as if they were Chinese symbols, without paying any attention to the letters, but special regard should be had to the meaning. When the child can read whole words with facility, then, and not till then in my opinion, he ought to be taught the alphabet and syllabic spelling. Thus we first learn words, and afterwards analyze them. For teaching on this plan, Mr Worcester has prepared an excellent First book or *primer*, as it is modestly called—a book which I wish was in the hands of every instructor.

The common practice of presenting the whole alphabet to the learner at once is very erroneous. One, or at most *two* letters, are sufficient for a single lesson. Care should be taken not to fix, or attempt to fix, the learner's attention too long on a particular letter, so as to *disgust* him; for in so doing, you inevitably do him a great and lasting injury. I have seen children who had received so defective instruction that they would pronounce the letters at once with correctness and with rapidity by beginning at A, and proceeding through the alphabet in the order in which they are usually arranged in spelling books, while they scarcely knew one in six of their letters when shown them promiscuously. This last way of teaching, if it be not completely out of fashion, at least ought to be. Various devices might be used to forward children in the practice of analyzing words, such as colouring the vowels, giving each vowel a different shade &c. The different sounds of the several vowels ought also to have a particular mark, so that the learner might readily distinguish them.

Teaching columns of words by rote, is quite as objectionable as teaching the alphabet in the same manner. And one reason among many others why we have so few good readers, is, that we are taught to spell and read words by wrote *only*; which is the same in effect as not being taught at all. For to what purpose do we learn that which we can apply to no practical use? Instead of teaching letters or words by rote; instead of studying either the alphabet or spelling lessons in course, or as an insulated exercise, they should doubtless be taught simultaneously.

As children who are taught the alphabet by rote, find it exceedingly difficult to recollect the names of the several letters composing the same, when they see them placed in a different order, as in words; just so, after being taught to spell *columns* by rote, they experience a difficulty of recollecting and recognizing those words when they see them stand, or hear them pronounced, in a *different* order. I have been sometimes surprised at the awkwardness of scholars in spelling or reading words promiscuously, while they would repeat from memory whole columns and pages which contained the *very same words*, with the utmost accuracy. When we reflect, however, our surprise ceases. In committing the letters of the alphabet to memory, it is obvious that we connect by association the sounds of the various letters together; so that the pronouncing of any given letter, suggests

to our minds the name of the next ; and so on. Now the case is precisely the same in regard to words which have been committed to memory by column. The reading or pronouncing of the first word, reminds us of the second—the second suggests the third ; the third, the fourth, &c. It is no wonder then, that when a child sees a word disconnected from its former associates, or associated differently from what it was in the column of the table, he should be puzzled. The wonder would be to see it otherwise. The fact is, committing words to memory merely, is not learning ; it is an attempt at it, to be sure ; but an attempt which must forever be vain. To cultivate one faculty of the mind to the neglect of the rest ; must always produce, so far as we succeed, a distorted intellect. Attention, association, comparison, judgment, all need cultivation at the same time with the memory, to produce soundness of mind. Too much of our effort has hitherto been expended in loading the *memory*, to the partial or total neglect of the other faculties. When any one remonstrates, an answer is always ready, namely, that he who commits useful and important matter to memory, is laying up in store for future years, and at the same time strengthening the mind.

I grant that the mind *seems* to grow and expand in this way ; but it is, and ever was, and ever must be, a *sickly* growth. As to treasuring up in the memory for *future* years that which we cannot now understand, it is a great error. Nothing should ever be taught a child but what he can see the utility of, in a greater or less degree, and reduce to practice. Let the order or method of communicating ideas be at the present time what it may, of one thing I am entirely convinced ; which is, that those ideas, which naturally lie next to us should first be acquired. Every new idea should be precisely that which in the order of nature is most nearly related to, and intimately connected with, the next previous one. To illustrate my meaning. Suppose a child to have already acquired ten ideas, the eleventh should be that which seems best calculated to explain, strengthen, fix, and improve the others ; at the same time it should be such an one as when associated with all or any of the preceding ten, will form correct and natural—not deficient and distorted associations. It is no matter whether the new idea be placed by authors in geometry, or natural history, or Webster's spelling book, or in any written book at all, provided it be the next in nature. These views are, if I understand him correctly, precisely those of Mr Locke.

It is with diffidence that I now proceed to suggest what I think would be, *as far as it goes*, a good method of teaching young children science. Give your child a piece of chalk, and a board or large slate, and encourage him to draw in imitation of you, a few of the objects in nature around him. Let the object itself be at hand if possible ; but if not, you may substitute a cut, or if this cannot be had, the child should follow your copy solely. The characters or letters which stand as the sign of that object—I mean its name—should be annexed to the cut ; there too the child should imitate, and be taught to pronounce often, till the cut suggests the name ; and finally, till the characters suggest it, without the cut or copy. After this course has been pursued a while, I would substitute a pencil for the chalk ; and before long I would commence the process of analyzing the names with which the child had become the most familiar. At the same time that form and language were thus taught, I would teach numbers and the art of computing ; at least so far that the child could add and subtract *objects*, and dots—for mental arithmetic should come in a little later ; as the power of abstracting the mind from real objects is, to little children of two years of age, rather difficult.

When the pupil had gone thus far understandingly, and with self satisfaction—for no lesson ought ever to be continued so as to tire the child, or cloy his mental appetite, and he ought to proceed no faster than he perfectly understands ; when he could draw the picture of a few of the most interesting natural objects around him with facility, write their names and analyze them readily, then, and not till then, he should be taught to combine words, and pronounce the combinations, as well as spell them. And when his acquirements would permit, I would give him words (nouns, at first,) to frame into sentences ; that is, if I had no book better than Webster's spelling book at hand, I would take the column in his book beginning for instance with the word *Baker* ; requesting him to form a sentence of his own contrivance which should embrace that word *Baker*, and at the same time make sense with it ; and so of the rest of the words in that column of which he knew the meaning. Or if so large a lesson were too much, I would make it much shorter ; for I would by all means avoid fatiguing the mind. This practice judiciously commenced and prosecuted, might be carried a great way. And it will be immediately seen that on this plan, arithmetic, writing, enunciation, spelling, reading, defining, and composing—nay,

and even grammar, might all go on simultaneously ; and that attention, and all the other mental faculties would be cultivated, strengthened, and matured at the same time.

In pursuing this plan of teaching children it will be found that the child will acquire a good business hand in writing, without the task of spending weeks and months specially for that purpose. Much time has been spent in our schools in writing, or rather *painting* over paper to no purpose ; to say nothing of the loss in knives, quills, rules, pencils, ink, and paper. As to rules and pencils in writing, they are quite useless, let us teach writing on what plan we may. Few will be found at the present day defending their utility, except in writing copyhand ; but even here I know from experience they do more hurt than good. Besides I know of no good attained by writing copyhand at school at all. Let the child acquire a good running hand, and I have no doubt of his being able to write a few words in a much coarser hand occasionally, should it be necessary. Defining too, a thing which is almost universally neglected in most of our schools, would, on the above plan, be taught in the best and most expeditious manner ; and be taught to some practical purpose. At present, when our teachers undertake to teach the definition of words, they borrow their definitions from dictionaries—and these too, being either synonymous or complex terms, want defining in their turn ; so that little good is gained by learning them. As for composing, a thing which older scholars deem so difficult, and generally hate, it would be acquired without the least difficulty ; and without ever viewing it as a task at all. Reading, which is but talking the ideas of another, and should of course be *like* talking, would thus be taught in such a manner that the learner would scarcely fail to read properly ; for in reading his sentence, which he must of necessity *understand*, he would most certainly read them naturally. When I undertook to enumerate the sciences which might be carried on simultaneously, at the close of the last essay, I did not mean to exclude others, for I think that the elements of many more might be taught well enough ; indeed, such is the connexion and dependence of the various branches of science, that it is more difficult to say which *could not* be taught in an elementary school, than which *could*.

I need not pursue this part of the subject further at this time. It will be objected to my views by this time that we want an elementary book. I grant it. The teacher wants one as a guide to himself until he shall become familiar with a rational plan of

teaching, when perhaps he will make *the child* his book. At present I think a first book for children a *desideratum*. I say *first book*, yet after all, I think what is here referred to, ought to appear in *numbers*. Every one who has been a child himself will know, if he reflects, that small things appear to children extremely large. Children are ushered into the spelling book ; very soon they begin to be told about reading it through, by way of encouragement: they are told how the twenty six letters make all the reading they see in the whole book, &c. but this is all mystery to children, and only serves to perplex them. Nay more, it *confounds* them. What *know* they about the number *twenty six* : about the various combinations of letters, and so on. As for reading the spelling book *through*, why it is an encyclopedia to them ! For this reason, and for other reasons, some of which may hereafter be enumerated, I think an elementary work for our schools should be published in numbers. Half a sheet of common size folded into twelve leaves, would be sufficiently large—how many of these would be necessary I cannot at present even guess.

In point of economy, were this the object alone, publishing in small numbers would be cheaper than any other plan, for young children wear out a common spelling book in a very little time, perhaps before they have ever used more than ten pages of it to any practical purpose ; and in that case, those ten pages, were they printed separately, would answer just as good a purpose, and even better than the whole book. Now ten pages of Mr Webster's spelling book cost less than one cent—less than the twelfth part the price of the whole book. I have said above that the size of Webster's spelling book discourages many children—that it appears to them as voluminous as an encyclopedia does to adults. If it be thought that I am trifling with the subject, such thoughts can exist in the mind of him alone who has never reflected. Such might be sent for information on this subject where Mr Locke sends his readers to get the idea of solidity ; to their senses. How many of us have experienced similar feelings to those which I have attributed to children above, when we have set about the perusal of a large work ; and how many times have we been tempted to lay aside the work, almost in despair of ever having patience to read it through. Now children possess these same feelings at the sight of a book whose pages to them appear almost endless ; besides they are expected to reason but feebly, while adults can call in reason to their aid, and over-

come the feelings of disgust which were excited. It is in part at least, with a reference to these feelings in mankind, that some very large works have been recently published in numbers ; Scott's Family Bible and Rollin's Ancient History, for example. There are multitudes who would buy them in this form, who would not, were they bound in volumes. And why not pay the same deference to the feelings of *small* children as *great* ones ? Another reason why a book should be in numbers is on account of its embracing the elements of so many sciences, and such a vast number of cuts, (as will be seen by and by,) that it would make several large volumes at best, especially if a sheet were folded into as small a size as I have mentioned above ; which, in deference to the feelings of children, ought, as I think, to be done.

Were all our *teachers* prepared to enter into the spirit of the mode of teaching suggested above, perhaps a small book would be sufficient. But such is not the fact, and is not likely to be for some time to come. Books are therefore necessary. I speak of having instructors imbibe the *spirit* of the above system, rather than the *letter*, for I would not be understood to propose a plan which can in every respect be followed by any person ; it is a mere sketch or outline of a system. Besides were I to adopt it myself, it could be, in any given school, only in part ; we must always adapt our instructions and modes of instruction to the circumstances which exist around us. And, above all, we should ever be making improvements, 'and trying' to approach, if possible, nearer and nearer to perfection.

None of the books in present use come near what an elementary work should be, at least none that I have seen, except *Worcester's first book* or *primer*, and the *Pestalozzian primer*, by Dr Keagy. Mr Worcester's book has some good things in it, but his plan does not seem to me sufficiently comprehensive, and the Pestalozzian primer is destitute of cuts. I am more and more convinced of the utility of cuts in children's books : *engravings*, I would rather say, for they should be the best copperplate impressions, and on first rate paper ; and great pains should be taken to have every object delineated with the most perfect accuracy ; added to which, the engravings ought afterwards to pass through the hands of a good painter, who is at the same time a good naturalist.

It will be seen already, that to prepare an elementary work proper for the circumstances of the present day, is no light or

easy task. If it required the mind of a Webster forty years ago, it requires a much greater now. But how limited, how inadequate are the views of the bulk of mankind on this great subject, the right early instruction of children ! *Any thing*, say they, will do for *little* children. Any thing for a house, any thing for an instructor, any thing for seats, apparatus, and even books. How long will it be ere mankind will learn the importance of making right impressions on the infant mind ; of planting the good seed in a highly cultivated soil, before the enemy has scattered tares ! If *anything* would answer for any portion of the human race, it would be for adults, rather than children :—for those who are already spoiled. Desirable as it is to make the miserable happy, and the wicked good, the time is not far distant when the soundness of the maxim, ‘ An ounce of prevention is worth a pound of cure,’ will be admitted, and mankind will govern themselves accordingly. The man or woman whose *mind*, *manners*, and *morals*, have been most highly developed and cultivated ; the best and wisest of persons, will be found most necessary to manage little children. Before this can take place, however, how must public opinion be reversed !

The first page presented to children should contain very little matter, so that the child’s first efforts may appear to be attended with success. The only rational stimulus to future exertion, is the pleasure which results from the acquisition of ideas ; mankind being so constituted by the Author of nature that the possession of every new idea produces pleasure. If a child plainly perceives that he has made progress—mastered one page, he will perceive that he now knows something which he did not know before ; and the pleasure of success operates as a motive to further exertion. The importance of encouraging the infant to act on this principle, will be enhanced by the consideration that it will preclude the necessity of emulation, and the baser species of ambition ; two fiends, who by themselves or their family, besetting and possessing mankind from the cradle to the grave, have inflicted on the world much of that depravity which we see and suffer.

It has already been observed, numerous elegant engravings will be necessary. Every page will need more or less of them, whatever may be the nature of the lesson. If the lesson, for example, be an engraving of a dog with the word *dog* annexed, let the type and engraving be tolerably large, faithfully represented, and properly coloured. If the lesson be an analysis of

the word *dog*, the cut will of course do no hurt. When the lesson consists of some of the words with which the pupil is perfectly acquainted, arranged in the form of a reading lesson, an engraving, or engravings will be indispensable. Suppose the sentence be, *The dogs play* ; two or more dogs ought to be neatly represented playing together ; and the more faithful the designer, engraver, and painter have been to their respective tasks, the greater will be the pupils sense of progress, and the greater will be his zeal for future improvement. Few teachers who have taught from Mr Webster's book, but must have noticed the fact that children almost universally read his first fable with more interest, and with more propriety, than they do his first reading lesson. In fact by the time they can read half a dozen of his first lessons, they will read the first fable ; and with less sing song. And no teacher will mistake the causes. The first fable, though it contains *harder words* than ' No man may put off the law of God,' is attended by a cut, which, though coarse, answers a good purpose. The words *man, boy, trees, and apples*, occur in almost immediate succession, and the eye catches their representations in the picture above.

An important idea here suggests itself to my mind. It is not uncommon to represent scenes of cruelty in books intended for children. A dog pursuing game, a cat seizing her prey, or a hawk tearing a bird ; these are among the most common pictures for children. Now, though these things must needs be, yet, in my opinion, they ought to be kept out of the sight of children as long as possible. No instruments of cruelty should be permitted in their habitations. The ingenuity of man may devise a thousand times ten thousand scenes for the instruction and benefit of the young, without the least necessity of demoralizing them directly or indirectly. While remarking on this subject, it ought to be added, that the cruelty which is generally said to be inherent in our nature, may have its origin in an erroneous education. Some men seem to take great delight in standing by and seeing animals of various kinds fight, and worry one another ; and children by sympathy with those whom they love, catch the spirit. And when an animal is killed for food, we usually manifest joy and mirth ; thus children soon learn to associate sensations of pleasure with the shedding of blood—with the groans and pangs of dissolving nature. But to return from this digression.

In the lessons for defining, that is, when the words are to be fitted into sentences in such a manner as to make sense, en-

gravings may be a most essential aid. Suppose the lesson to be the following words : *Baker, cider, ivy, paper, rider*. Now to each of these words some appropriate design ought to be affixed, that would serve as an explanation, and aid the scholar's imagination in forming his sentence. A baker's shop, a papermill, a horse and his rider, a cider mill, an ivy, a sheet of paper with quills lying around it, any or all of these pictured out near their respective words would be of great service to the learner. As to cuts in reading lessons, their importance is so obvious that I am surprised at their ever having been omitted. Reading lessons should abound with them. For some years after children begin to read, they ought hardly to be permitted to read a sentence but what is illustrated by one or more engravings.

One important result would be obtained from correct engravings which I have not yet noticed. They would suggest to the instructor the means of communicating a multitude of moral lessons. More morality, more religion, can be inculcated and *fixed*, on this or some other plan similar in principle, than can be done by precepts in almost any other way ; and these sublime subjects would thus be taught daily.

This is the way to teach religion and morality at school. It is not by long lectures, by hanging texts around the room, or by writing them for copies, that we can teach these things. It is by a heavenly example. It is by seizing on every occurrence which comes in our way, and drawing a moral lesson from it. And even then, if the pupils of our charge see us going much out of our way—straining, to effect our object, our plan is most surely defeated. Neither will formal catechisms, long prayers, or reading the Bible, teach religion to a school. I admit the propriety of beginning and concluding the daily exercises of a school by a short prayer in plain familiar language, such as every child can understand. Nor have I any objection to the reading of a chapter or part of a chapter, and explaining the same once a day in school. But I am decidedly of opinion, that as a common reading book in school, both the Old and New Testaments are among the worst books that could be selected. My reasons for this belief will readily be gathered from what has been already said, and from the next Essay. As to catechising, if it ever ought to be performed we select the worst time for it. When children are tired with the studies of the week—when they are just ready to be dismissed, to drag in the catechism just then, why we could not take a surer way to make them hate

it. If it be worth anything it ought to be taught on Monday morning. This is the practice in some places. Whether it does any good even then I cannot determine, but I am morally certain that the cause of virtue and religion never was and never will be forwarded by teaching catechisms on Saturday, at the close of the weekly exercises in the schools.

ART. II.—*Reports of the Board of Visitors on the Examination of the United States Military Academy at West Point.* June, 1827-8-9.

THE subject of education seems at this time, as it always ought, to be occupying a great share of public attention. And 'if to do were as easy as to tell what were good to be done,' the science would be rapidly advancing to perfection. But it is far easier to instruct than to persuade, and the great difficulty seems to lie much more in the want of resolution and perseverance than in the want of judgment and knowledge; and the weakest half of mankind give their children much more good advice than the wisest half ever enforce, even where they are perfectly able to enforce it. Perhaps the doctrines of civil liberty and equal rights so happily prevalent in this country, may be practically extended to many of the rising generation before nature has prepared them for their rational application. It is, to be sure, highly desirable that in all governments, whether domestic, municipal, or national, the subjects should be fully convinced of the reasonableness and expediency of the injunctions which it is their duty to obey. But in the earlier period of domestic government this is obviously impossible, and in no government can it be made the *sine qua non* of obedience. As the intellectual faculties are gradually developed this point ought to be more and more insisted on, but if ever compliance is required only so far as conviction is produced, they may both be given up together. However reasonable any regulations may be, an indispensable requisite for a cheerful compliance with them is the impossibility of evasion. Such considerations may reconcile

us to military discipline in a literary institution, provided that its reputed maxims of vigor and punctuality can be carried into complete execution.

The United States Military Academy, being the only literary institution under the management of the general government, necessarily arrests the particular attention of every person who feels a suitable concern for the character and interest of the country. And the official reports of its progress and situation, which are annually presented to the public, are calculated to fix this attention, though they may now and then excite suspicions of some kind suppressions, or some good-natured exaggerations. The acquirements here are intended to be much more extensive than were formerly expected. They are far from being exclusively military, but besides that, comprise a profound course of mathematics, mechanics, physics, chemistry, and the application of these sciences to the useful arts of life, under the title of engineering, together with French and drawing. Thus the military officer will become as useful in peace as in war, and will find other objects to excite and gratify his zeal for the public service when the barbarous employments of the field are suspended. The instruction, as indicated by the performances of the young gentlemen, is represented, and no doubt justly, as most able and faithful.

This course must be little satisfactory to the fond patrons of what is called elegant literature. It would be hardly worth while, in order to justify it, to engage in the much mooted question on the relative importance of the sciences and the languages. We are far from wishing to depreciate either of these highly important and honorable objects of human pursuit, but necessity sometimes determines questions which no human ingenuity can decide. The classic writers of the English Augustan age, whose example perhaps has contributed most to raise the credit and importance of ancient literature, employed in their academic course twice the time that can be afforded for the same purpose in this needy, bustling, impatient country, while during the century and a half which has elapsed since they were exploring what was then the whole field of literature, the domains of the human intellect have been more than doubled by the addition of the physical sciences, the powers of the mind probably remaining unaltered. And it is hardly possible that even Sir William Temple, or the dean of St Patricks himself, could they revisit the earth, would soberly depreciate the labors of modern genius

from Sir Isaac Newton to Sir Humphrey Davy, or even consent to rejecting the immense results from the system of elementary instruction.

In view of these considerations we must elect the alternative either to compel our youth to scatter their steps with equal frequency over the whole field, enlarged as it is, in which they will gather a little of every thing and but little of any thing, or allow them to select their favorite soil, dig deep and cultivate thoroughly and enjoy the rich crop which their diligence and industry must produce. It is only by the latter method that those great men are formed in foreign countries from whom we receive most of our instruction. We would by no means urge an entirely exclusive attention to any one branch of literary acquirements—the mere mathematician, the mere grammarian, or the mere poet, if such a thing can exist, is a very imperfect character. A cursory notion of the principal points in all the sciences is perfectly compatible with a profound knowledge in some one or two, but the task of a universal scholar is growing harder and harder every day, and he who insists upon keeping his acquirements in all the sciences at the same level will probably acquire only a universal smattering.

There is one feature in the management of the Military Academy on which we wish to speak somewhat at large, for with regard to it there exists a great evil, and it is very common in this country. We mean that injunction on the academic staff from the head of the department, by which any cadet, who shall fail to make suitable progress either from negligence or incapacity shall be dismissed from the corps. We are perfectly aware how utterly hopeless is the attempt to urge the adoption of this invaluable practice in the other literary institutions of our country. Most of them indeed can show a statute to that effect, but if they exhibit any instance of its application, it will probably be some helpless being without connexions to resent the affront or money to pay his bills. But that reformation is hopeless is no reason why reprobation should be withheld. The preacher very properly perseveres in denouncing vice and impiety without expecting to produce or even accelerate the millennium.

In stating the evils of the common practice we cannot expect to advance any thing new ; its consequences must have forced themselves upon every person who considers the nature of literary pursuits, and literary honors. In the first place it degrades the character of our literary institutions, and destroys the

value of their testimonials. To secure the credit of our merchandise every barrel of beef and every keg of butter must be thoroughly inspected and receive a certain brand, which must truly declare its nature and quality before it can be offered in the market. But that brand, called a diploma, only requires that the article that carries it shall have lain a certain length of time in store, and paid certain stated fees, and its credit with the intelligent part of the community is exactly proportioned to its requirements. As to the students, the diligent and ambitious lose all stimulus arising from the apprehension of being surpassed, and finding themselves so far in advance of their companions, and too often drawn into ruinous habits by those who are unworthy of the opportunities offered them, allow themselves to imagine that they have done enough for improvement, enough for fame, and indulging the indolence natural to humanity rest, on their arms and lose more than half the fruits of victory. This practice displays all the barbarity of Mezontius; the living cannot revive the dead, while the dead cannot fail to infect the living. The public are teased with a swarm of literary men, degrading their rank by begging business, and many learn for the first time what study is, when they are compelled to determine where they shall seek a subsistence. In this scramble for employment, the mass of the community are little qualified to discern the difference, and here again the idle and profligate, after having prevented their companions from making the acquirements which they would otherwise have done, deprive them of the reward due to those which they have actually made.

Simple as the correction of this unfortunate abuse may seem, it requires more conscientious firmness and self-denial than we expect to see exercised. For there are people, and they are too frequently met with, whom it might be very inconvenient to offend, but whose pride can never brook that their descendants, however stupid and wicked, should ever submit to what has been unjustly called the primeval curse denounced on the progenitors of mankind, although it is well known that ancient families, like the fabled individuals endowed with immortality, must often crawl along the paths of gentility in all the decrepitude of Struldbrugs. There are also dunces absolutely unimproveable, who set their hearts so fondly on some of the literary professions that it seems cruel to undeceive them. 'Optat ephippiæ bos;' and few there are who have not been tortured with some vexatious aspirations

of this kind. But the sooner they are checked the better it is for those who entertain them, as well as for society at large.

It must be remembered that this rigorous exaction of suitable improvement should be confined to those institutions whose members are professedly prepared to serve the community by the exertion of their intellectual faculties. Those who expect to gain their subsistence by the labor of their hands, for which there is much the greatest demand in this country, ought by all means to be so far instructed as to become intelligent citizens, and it should be beaten into them if possible ; but those who declare themselves candidates for the higher stations in society should possess dispositions too elevated and generous to require the lash or the spur. And those who, after the days of childhood need much of what is called discipline, are altogether unworthy to be presented to the public as its instructors and directors. We admit that these profligates may sometimes reform, but where one of them becomes a really useful member of society, ten worthy, promising young men are ruined by their seductions. Our colleges are not trammelled with private foundations, destined for characters of a peculiar and arbitrary description, no way connected with literary merit, but are erected and endowed, professedly at least, for the benefit of the community at large, and for that purpose should be reserved for the most worthy. And it is absolute fatuity thus 'to take the children's bread and cast it to the dogs,'—to squander away means thus sacredly devoted, in a manner which so seriously impairs the tone of literary enthusiasm, reduces by one half the grade of intellectual acquirements, and ruins the moral habits of those inexperienced young men whose literary ambition it has previously prostrated. In the words of an ingenious writer,* 'It is a pity to see the soil wasting in the nurture of this unproductive pestilential underwood, juices which, under better direction, might give breadth to the oak, and elevation to the pine.'

Were every member of our higher literary institutions, who from whatever cause fell below mediocrity in his literary acquirements, or endangered the moral character of others by his disorderly habits, kindly and silently dismissed, and were the general motto to be, 'Occupet extremum scabies,' the students would be constantly exerting their highest intellectual vigour under the stimulus which Alexander required of having kings for compet-

* Peter's Letters to His Kinsfolk.

itors, insurrections would cease, and rebellions be no more, and the whole monkish apparatus of penalties, from fines to expulsions, might be banished from our academic codes. College graduates might be somewhat less numerous, but every one knows that now the market for that commodity is greatly overstocked, and doubtless a number of candidates, amply sufficient for the demands of society—quite as many as could be suitably supported, would still present themselves for employment, while their attainments and character would reach an elevation far beyond that which now confers the highest celebrity for learning.

ART. III.—*On Domestic Management of Children, or formation of the general Character.*

[The following remarks from a correspondent are particularly deserving of the attention of young and inexperienced parents ; and if carefully observed may prevent many hours of suffering which are apt to ensue from the bad management of children.]

IN this day of intellectual excitement, and general zeal for every kind of improvement, to speak of human prejudice may sound like the introduction of obsolete terms ; yet perhaps there is no subject in which prejudice is more manifest than that of education ; the very one on which so much is said about improvements ; until animadversions on past and present systems seem to have become quaint. These censures, and this general excitement seem to indicate that the course hitherto pursued is no longer adapted to the circumstances and demands of the people ; that the active vigour of intellect is in advance of the means provided for its culture and discipline ;—multiplied although they are, yet perhaps if their character be analyzed, it will be found that the general habits of thinking and reasoning, even of the censors themselves, are not wholly unshackled from their acquired bias. It is true we have schools multiplied, and branches of study increased almost without number ; and facilities for improvement are demanded and enjoyed by all descriptions of people, even beyond what many believe salutary for society. They may be correct. But are not the objects and motives for literary pursuits in reality greatly

multiplied in this country, within the past half century? And do all the increased facilities for education bear that intellectual character that might be desired?

We demand a liberal education for our sons, not to infuse high and noble feeling, just sense of honour, exemption from vulgar prejudice, from low bred baseness, blind superstition, and bitter bigotry, but rather to fit them for professions, for greater facility in making money. The very fundamental principle of the grovelling mind is made sole motive for superior education. In certain stages of society this must be the case, when the pursuit of every one is merely support; and in such state there will be no such thing as education truly liberal. The question then occurs, whether such be the present state of this country, or whether our reflections upon the subject are not running in a worn channel, taking it for granted that the objects and subjects of education must be always understood; however much the condition, taste, and employments of the people may have changed.

For a century after the decease of our primary pilgrim fathers, the 'march of mind' in this country was inevitably retrograde. Notwithstanding the incredible exertions and sacrifices, made by the emigrants to secure and preserve to their posterity the blessings of literature and science; and though they so far succeeded in New England as to stamp a decided and permanent character on the general taste and habits, yet the mass of the people were compelled by uncontrollable circumstances to forego these enjoyments for several generations.

While the country was uncultivated and almost uninhabited, the whole time of the few settlers was not too much, by most assiduous industry, to maintain their defence, and procure the necessaries and comforts of life. Their learned fathers, bred in more refined society, being extinct, their children would feel no demand for intellectual attainments or enjoyments, beyond the ability to read the scriptures, and find out the Sunday's texts, and write up the balance of their neighbourly transactions. Refined taste and sentiment, and almost science, except in the immediate vicinity of Cambridge and Boston, were scarce known, either in name or idea.

Having at length surmounted these hardships and difficulties, and being able to enjoy leisure and luxuries enough to induce ill health, physicians came in demand; and lands and their productions becoming objects worthy accumulation, litigation ensues, and demands attornies; consequently professional

skill became a source of emolument, and an object of eager pursuit. This determined the limits of necessary education. And this seems also to have established the limits of public opinion on the utility or design of literary knowledge. Is any question more common on any proposal to extend the advantages of more literary and scientific instruction more generally, and that to both sexes, than this, 'Of what use will it be to them; what good can a knowledge of abstruse science do them?' Implying, certainly, that exemption from manual labour, and pecuniary emolument were the sole objects of knowledge.

The cultivation of refined taste, noble feeling, and general literature, certainly belongs to a state of society, advanced beyond the mere acquisition of necessary knowledge, indispensable to active business. Has not our country arrived at this state? The means of living luxuriantly—far too luxuriously, are now enjoyed by almost all descriptions of people. Manufactories are every where established, trade has its over supply of conductors, the labour of agriculture is diminished by aid of machinery that is continually increasing in power; the learned professions, by occupants, pretenders, and candidates, are filled to overflowing; female avocations are curtailed or superseded by manufactories,—in consequence of these several causes a goodly portion of leisure time is afforded for the culture, exercise, and enjoyment of intellect. And man, being an intellectual animal, whose powers, by the demands, collisions, and excitements of society, must increase in strength and activity, if he have not some proper object on which to spend this accumulated power, it will break forth into exuberance of passion, or sink the mental stamina into that '*tedium vitæ* that is the death of every intellectual grace.' But its more usual course is to seek relief in idle curiosity, or busy meddling in affairs and conduct in which it has no proper concern; or in the sensual gratification of artificial appetites and passions superinduced by idleness and vacuity. Is not this leisure possessed by so large a proportion of the youth of the present day, as cannot but give a tone or character to general society? Society being contemplated at this point of observation, will any one repeat the question, 'What will be the use of a more liberal culture of the intellectual man?' Possibly, if it be considered how preponderating is the influence of woman, in directing general taste, an answer might be found to that seemingly unanswerable query, 'Of what use can philosophy and mathematics be to females?' It should be remembered that

the benefit of a good and scientific education is not confined to the individual possessing it. Woman, to be sure, is now permitted to know many things that a few years since would have been thought preposterous ; but is there not still a disposition to take it for granted, that what has always been done, and never controverted, must be right ? Notwithstanding her having so far burst her former bonds, (and we would hope not to the injury of society,) yet is there not a prevailing impression that instructing her in the ancient languages, matter and metaphysics, must necessarily render her disagreeably masculine ? But would it really render a lady disagreeable to possess correct reasoning powers, strong mental energies, close application, and steady perseverance ? It is true she has hitherto, in most parts of the world, if not all, been regarded chiefly as a minister to the senses of her lord. Among the savage tribes a servile drudge, to hew wood and draw water ; by the orientals, to amuse by sweetness of voice, symmetry of form, and suppleness of limb. Even in the christian world, is it not the *ne plus ultra* of her excellence to replenish and grace the table ? Doubtless this should be a *sine qua non* ; is a masculine understanding incompatible with it ?

But, perhaps education in either sex is not so deficient in science and languages, as it is in mental and moral philosophy, and historical and general knowledge ; in information calculated to awaken observation, to stimulate and invigorate one's own mental powers, to lead to principles, by which to regulate one's conduct. Language is unquestionably the proper instrument for these attainments, but this should not be mistaken for learning itself. And since the primary education of mankind, and consequently the forming of taste, and establishing a permanent tone of feeling devolves on the female, is it judicious, or is it the effect of early prejudice, to ridicule and discountenance any attempts in her, at what are esteemed masculine attainments ? Are any mental exercises otherwise masculine than by having been hitherto monopolized by that sex ? Is there any literary attainment that is not in that sense masculine ? A few centuries since, women could not read, and it was supposed an accomplishment quite unsuited to her condition, and quite out of her sphere ! After she arrived at this unnatural altitude, to write and cypher still suffered the same general proscription ; 'Let her go spin,' was her universal sentence. A similar outcry has been raised against every step of her progress ; as also against her applying her knowledge to

any use. A very few years since, it was condemned not only as low but as grossly masculine, and shockingly out of the female 'sphere,' to instruct in music. The cry seems at this time to be chiefly directed against the ancient languages, mathematics, metaphysics, antiquities, and general philosophy ; not forgetting, in the course to lash at reading clubs, or any combinations for facilitating further attainments.

But it is not the present object to write a dissertation on the education of woman, or a discussion of her mental faculties, suggesting merely that her faculties, whatever they may be, should receive the best culture of which they are capable, that her influence on society may be of the most salutary character. Let it also be remembered that the literary part of education is far from constituting the foundation of character ; it is the preparatory part with which woman is so intimately connected, and to which we would direct the principal attention. For it is conceived that the utility of a precept or principle depends not so much on its truth being known, as on its being frequently brought before us, and applied to our own immediate circumstances and demands. And since the maternal influence over the heart and mind of the child is incalculably powerful and abiding, and her responsibility proportionally great, we would gladly awaken increased attention to the subject of infantile management. The word of God commands to train up a child in the way he should go, &c. but has left it to reason and experience to study the means to turn him into that way. It hence becomes the part of human philosophy to discover the course, and remove the obstructions. Mothers, very generally, acknowledge their incapacity for the arduous task of directing and training the versatile mind and temper of children. And certainly the hitherto contracted limits of female culture, in the grand fundamentals of thinking, reflecting, reasoning, and judging, afford cause but too just, for this universal complaint ; yet much, very much, may be accomplished, where the will is heartily enlisted in the cause ; and persevering energy applied. This assertion is not made under the impression that children are universally easily wrought upon by moral motives, to forego the indulgence of self will, appetite, and passion ; but because they are not so to be wrought upon, it is indispensable that the parent be ever watchful of early habits, and early imbibed principle, or prejudice. 'A good education,' says Mrs More, 'must be the result of one consistent connected system. Method is the hinge of business.' The various

faculties, tempers, and dispositions of children can be prepared and cultivated only by various experiments, requiring unremit-
 ted attention. Sympathy seems the chief innate moral instinct and operating principle by which the character is formed ; equally active in leading to vice and misery, or virtue and happiness. And since all human improvement rests on that inexplicable law of our nature, the principle of association, let that be ever kept in view. Any parent who observes the early attempts of the infant at making use of its hands or feet, or articulating words, will see the principle exemplified, and will perceive how soon a propensity is acquired ; for instance, for using one hand in preference to the other ; and because he finds these propensities at first easily corrected, and that it is almost impracticable when the habit is confirmed ; he will understand why they are believed innate, and see the importance of paying strict attention to the earliest habits of a child. But for this power of association, it appears, man must have forever remained in infant ignorance, or a mere sensitive lump of clay. If we reflect that all the sensations or perceptions of mind, with feelings and passions, are by this law connected with the motions of the muscles, nerves, and brain, employed in their production and operation, and that they acquire, in the same manner, a readiness to run into any particular course, we discover the foundation of those moral propensities that are also esteemed innate. If we add to these, that all the operations, discoveries, and reasonings of our minds, are subject to the same law, its importance must be esteemed immense ; and the utility to the parent, of a competent acquaintance with mental philosophy will be equally apparent. As its influence cannot be rendered too obvious, we would further illustrate it, by observing that the exercise of any particular muscle, nerve, or set of organs, brought into action in the expression of any passion or affection, whether the swellings of anger, the frown of contempt, or the smile of complacency, will, if artificially cited, produce sensations or feelings perfectly similar. If a melancholy person, by constantly attempting to smile, soon becomes really so ; unless his gloom is an irremediable disease. A stranger, by carefully endeavoring merely to gratify the fond parent, by inductions in himself, becomes insensibly pleased. A knowledge of this principle would render a bad man good natured, unless from settled malignity he is incapable of it. We have seen a man, who being a

an expression of a kinsman, that he imagined not quite sufficiently respectful, at first assume a gravity, and express a degree of disapprobation of the expression, which articulation increasing the activity of nerves, and swelling of the muscles, this activity in turn increasing his anger, his wrath augmenting by every motion—not of lips alone, but his whole frame, till he wrought himself into a perfect frenzy ; and yet the original expression could scarce be deemed offensive, and not a syllable of aggravation uttered after.

Under the term education, is meant to be included the culture and expansion of the whole life. The objects may be considered, under health, temper, disposition, intellect, and morals. Whatever is essential to either, will be found, directly or indirectly, to contribute to the others. Man, being an intellectual animal, his physical powers seem not to acquire their full vigour, where the mental energies are left inert ; as may be judged by observing the difference between the Arabian and the Hottentot. The directions of physicians for ensuring health are few and simple, yet it seems very generally disregarded. They may be reduced to a plentiful use of cold bathing, with diet plain, simple, coarse, and uniform ; that children be not tempted to gormandize beyond the actual appetite of nature. To an unsophisticated appetite milk would long continue the most grateful food, did not the child behold other people devour, with higher zest, more stimulating viands. There seems greater cause for caution against over feeding them, than most parents appear sensible of. The error operates very early, the mother or nurse, observing any uneasiness in the infant immediately applies the breast, if it receive it, she concludes its pain must originate from hunger ; when, in truth, pleasure is so intimately connected with that, in the mind of the child, it will accept it in almost any case. The mistake is carried still further, when feeding succeeds to nursing. Instead of administering in very small portions, the nurse will give as much as she can persuade the child to take ; this produces an artificial appetite which must be gratified ; till it will call for food on every uneasiness, or vacuity of mind. The mind of a child must also be fed in very small portions, but should be kept active and employed. Much food may to be sure produce a thrifty plant, but it will be too thrifty for duration, or for mental expansion. Effects still more baneful arise from viands of a nature too stimulating ; the appetite demands a continual increase of the exciting principle, the pleasure of high excite-

ment is followed by languor and pain ; fretfulness, anger, ill will, with the whole family of sordid passions that take deep and vigorous root in so well prepared a soil. It certainly demands no extraordinary information to understand the statements of physicians, that to excite the system, by what means soever, into an action too rapid for the native stamina of its powers, which by the law of association, continues beyond the immediate activity of the stimulus, after which it sinks as far below its natural action, yet still more deleterious are the effects of keeping up the stimulus. The continued and increasing excitement of body, moreover, strengthens the more violent animal passions, and subtracts in proportion from the necessary nutriment of the intellectual powers. By pampering the appetite, as fashion dictates, and associating the idea of good with every rarity, an unnatural taste is easily superinduced, and the whole mind and attention turned to this sensual gratification. How often do we see the fond, mistaken mother, who by extraordinary stimulants has herself acquired a relish for fashionable luxuries, that no native appetite will receive, exert her utmost skill to induce her little darling to 'taste a little bit, it is so delicious, so charming,' devouring it herself with great gusto, till she finally succeed in implanting a similar depraved appetite with her own, and secures to her offspring the lasting blessing of being as great a sensualist and devotee to luxury ! with the additional advantage that it will in the same manner be communicated to the next generation. These remarks are not supposed of universal application ; but the securing a good constitution, with early ability to regulate the appetites, constitutes so important a part of education, they certainly may be excused. It would seem that the 'march of mind' passes rather too slightly over the luxuries of the palate.

As we come to speak of disposition, it should be observed that the early habits should be formed on a scale so moderate, that excitements may be increased as years increase, without diminishing future happiness. Every season has its appropriate sources of enjoyment. By keeping expectation moderate, disappointments are avoided, and consequent ill temper. If great pains be taken to make the infant display its opening powers, and to expect the notice and smiles of all, when it afterward becomes expedient to silence it, and reduce it to obedience, one need not be surprised to find it possess a strong 'native propensity' to self will. No parent desires his child should be ill tempered, let him then be cautious how much expectations are excited. Most of the difficulty of after management of children, arises from having rendered

them thus early of too much importance in their own eyes. Sympathy, as we have said, is the grand connecting principle of association between one and another. Is a child sullen, let us induce a laugh ; it may be done by the sudden, unexpected introduction of something ludicrous, altogether foreign to the source of vexation. These risible motions displace the angry ones ; and the temper is much more effectually tranquillized by forgetting the cause of disquiet than it can be done by any coercion in our power. Every mother who wishes a child to laugh and sport, will laugh and play herself ; so if she desire to quell it when boisterous, she must speak softly, and propose something to compel it to reflect. While a child is in an ill humor it is no time to lecture ; like medicine offered the sick it increases the disagreeable sensations, when it is our aim to induce pleasant ones. Example, through this power of sympathy, has the most powerful influence ; the parent must be herself, what it is desired to make the child. Pleasing ideas, as far as possible, must be joined with whatever is desired to have done ; a child can never find pleasure in obedience, if he perceive the parent find it in commanding. And through our whole life, that duty is likely to be but ill performed that is an unpleasant one. Would we have children affectionate, tender, and benevolent, must we not be the same ? We may enjoin the golden rule by many a solemn repetition, but that very solemnity, implying something sad and disagreeable, will defeat them. Instead of this, let them be led by practice, to feel how pleasant it is to bestow on the necessitous, to relieve the miseries of the wretched, and fill the hungry soul with good things. This constitutes the difference between genuine benevolence and that extorted charity which bestows what cannot be withheld, without infamy. Such minds can never know the luxury of making others happy ; this privilege is reserved to the truly benevolent. Children should witness our solicitude for the comfort of others, and our gratification from procuring it. But if it should be necessary to refuse a solicited charity, let them not witness it ; there may be good reason for it, but that the child is not able to weigh, and his kindly feelings may be blunted, by sympathy with our refusal.

In forming the temper, it may not be amiss to recollect some of the remarks of Miss Edgeworth, and Mrs More, on the article of *dress*. It is surely often made a source of very unnecessary vexation ; first, because it is inconvenient and disagreeable to be so teased and lectured about keeping their

clothes nice, because they are too good to be injured by the romping plays, so grateful to them ; and next, as soon as thoroughly initiated into the importance of finery, their minds are tormented lest others have better than themselves. It is peculiarly injudicious to impress the idea and importance of pretty dresses and pretty manners for company. The company of the parents, and respect for them, should be paramount in young children

Playthings are often equal sources of fretfulness, instead of pleasure ; parents purchase costly toys to gratify children with their beauty, and then tantalize them by requiring them to be kept safe, nice, and clean, up in the closet ; and sometimes go so far as to tell them that such another child has not got such a beautiful one, and ‘you’ll not let him have your’s, will you ? How glad Mary H. would be to get one half so fine !’ ‘Charley, my love, you must not break that pretty new coach, Tommy G. would be ever so glad if he could get such a one ; go set it up in the closet, and see how prettily the little boy rides, driving the horses !’ How many bad passions are infused in these childish admonitions, that the mother expects them to forget when too large to play with a gilt coach. ‘Thomas has not such an one,’—here selfishness, vanity, and imaginary superiority take root in the heart, (a soil that not so readily yields the plants once fixed, as a gilt coach may be forgotten,) and that in the meanest shape ; displayed in things of no possible use ; for not even his own pleasure is promoted by looking at things he must not touch ; nor indeed in handling them, unless he can put them in motion ; especially while tantalized by being told it his, and yet he has no control over it. Things given for amusement should be entirely at their disposal, or they become sources of misery and ill humor. A dull hatchet, an old pair of shears, or any thing children can use, affords much more gratification than the most splendid toy ever invented. Toys, of the young or old, seem to derive all their importance from their being coveted by others. It is desirable to let the baleful competition in the science of outshining remain as long as possible a secret to the young. It is employment, not amusement, children want ; something on which they can exercise their invention, taste, and skill. It seems not good to give them things as their own, but if we do, let them be absolutely so, and when they give them away, let them know they are no longer at their command. A taste and habit of monopolizing may be acquired, long before the necessity of private

property, and regulations concerning it are understood. Lectures on loving others as one's self, or the principles of social compact will have little influence, when the whole character has been early formed on the practice of appropriating as much as possible to one's self.

The passion fear or terror, though manifestly not an innate instinct, often acquires a very injurious influence in forming the disposition and character. It is early imbibed, and long endures. Too much care cannot be used in guarding its entrance into the imagination. In infancy it is often productive of disobedience, deceit, and ill humor. It frequently gets possession of the mind, no one can tell how, and appears sometimes associated with familiar objects. The child may, perhaps, at some time have been troublesome, and the nurse to hush it, might cry hark ! hush ! making a show of terror in her countenance, which the child, catching by sympathy, becomes alarmed, though quite unconscious of any cause, but the terror may be associated with the place or any thing about it, and if taken from the place before appeased, and the fright forgotten, it will probably, on being again brought there experience similar alarm, while no possible cause will appear. Whenever such terror is found associated with any particular situation, it must be eradicated by the same process as would be instituted to cure a young horse. That is, something agreeable must be contrived in the same place, to engross the attention, occasionally withdrawing the pleasant subject, that consciousness of the place be not lost, until the agreeable ideas take the place of those of terror.

Terror may in some instances have been originally induced by some strong impression made on the tender organs of sense by any sudden or violent noise, or rare, striking sight, accompanied with positive bodily pain : hence the recurrence of any one of these circumstances may produce the same terror ; but it is probably most commonly caught by sympathy, and imitating the muscular contortions of others. But from what cause soever induced, let it by every means be exterminated. No man would permit a young colt to grow up under its influence, and is not deliverance from causeless alarms as desirable in a man as in a horse ? Children, as they acquire the requisite understanding, should be made acquainted with the real dangers to which they are exposed, and a prudent caution sedulously instilled. 'Caution is a most important good, terror a most formidable evil.' Children had better suffer the lesser inconveniences to which they may be exposed, such as slight

falls, burns or bruises, than to be terrified by shrieks and alarms to prevent them, and thus rendered all their life subject to the remediless horror of fearful apprehension. The best preventative of this horror, is, that the mother herself be fearless ; but if, through early mismanagement, she be subject to these tremulous alarms, for any cause, or for no cause, let her by all means keep the knowledge of it from her children. By this effort to seem unconcerned, she may indeed do much toward curing the infirmity. Above all things let not fear be made an instrument of obedience. If bears, robbers, the beggar-man, and black man be made substitutes for love and reverence to the parent, by what means are proper love and reverence of the Deity to be inspired ? Could obedience be thus obtained, still the terror would produce a thousand ills to one good. Let children understand that any thing is not necessarily evil because not understood. The uncorrupted mind should naturally expect every person and thing to be good, until experience prove them. A credulous disposition is incomparably to be preferred to a suspicious one. Terror, fear, suspicion, jealousy, envy, malignity, &c. are all relatives of the same family, and succeed each other in a connected train. As we shut out robbers, murders, and mad dogs, let us speak much of the good things we enjoy, taking no notice of the inconveniences we suffer, or the unpleasant accounts we hear of others. Yet let us avoid mystery ; all appearance of wishing to conceal any thing, exciting at once both alarm and curiosity.

‘ Forbear threatening,’ is an apostolic injunction that should not a moment be forgotten by the parent ; whenever it is necessary to annex a penalty to any offence, let it be specific in its nature, time, and place, and perfectly comprehended by the child, and soon to be executed ; and above all let it be punctually performed. ‘ The angry parent threatens, what the calm one is too tender to execute.’

Much stress is usually laid by moral writers on subduing the will, but prevention is better than cure. The first care of the parent should be to subdue himself. Perhaps the greatest difficulty in the management of children grows out of the parent’s inability to conduct with firmness, and moderation, where all circumstances concur to agitate him. But having secured to himself the power of conducting with calmness, and given the child time to cool, and reflect, if it still persist in maintaining its perverseness, it must certainly be brought to yield ; but putting one’s own will in opposition is not the most effectual or

useful mode of accomplishing it. Sympathy is the ruling principle ; if the child see, or think he sees, that gratification of will is the object of the parent, he yields only because he is forced to submit to power, but with increased desire of maintaining his own point. It must be obvious to any one how exactly the temper of the parent is reflected by the child.

Whenever coercion is undertaken, let the case be such as the child must perceive the reasonableness of without entering into argument, and let him see that the parent would willingly grant his desire if it were not inconsistent. Children have a quick perception of justice and injustice in our dealings with them, and perhaps their obstinacy often arises from a consciousness that we and not they are in the wrong. This contest for mastery would rarely become necessary if children were not immoderately caressed and flattered in early infancy. Let it be decided as early as possible, and the child accustomed, as a thing entirely of course, to follow the direction of the parent. No species of coercion can secure that voluntary submission that grows naturally out of entire confidence. Let the mother secure this, and she may lead, in most cases, without opposition. Let them be accustomed to tell her all their little secrets, as they would a kind school mate ; let her enter into their feelings, as far as good ; and if they reveal any thing censurable, let no notice be taken of it at the instant, as that would bar further confidence ; but take the first opportunity to tell them she is very glad she was told of that circumstance, because they being little could not know how improper, unjust, or injurious it was ; and how much more discreet, correct, or suitable it would have been to say or do thus or so. Assuring them that they will not be likely to act very wrong while they acquaint their parents with all their conduct. It is generally better to consider the faults of children as little, and the consequence of their few years and inexperience, and ground upon it a motive to acquire information, than to censure with severity. They should rarely be called naughty, and when they are, let it be with great seriousness. When a child has acquired a reputation for roguery he will play a thousand tricks merely to show his skill. Securing their confidence will prevent deceit and indirect means for concealing their faults ; and all crimes of which they are liable to be guilty, are light and trifling compared with habits of deceiving. Children are naturally open and candid ; it requires art to deceive. Yet they early acquire a disposition to excite astonishment or admiration, unless they

have been uncommonly well managed, that induces them to exaggerate facts, and represent things in the most striking manner. This hyperbole should be prevented by never expressing surprise and astonishment at their news ; and by requiring them to state expressly, each individual article, in its exact limits. Dr Johnson says, that if a child say any thing happened at one window, when it actually took place at another, it must not be suffered to pass. 'For the error may be a trifling fault, yet remember that a bad habit is a great one.'

Prevention is better than cure. The power of early impression is acknowledged by all, yet perhaps it is not generally understood by it, that impressions of a certain character, create an aptness to receive others similar, rather than of another class. On this principle terror, fear, suspicion, jealousy, &c. introduce each other ; admiration, astonishment, horror, cruelty, and revenge, and the like, seem also allied ; the first tendency is therefore to be suppressed, and every attempt to exaggerate truth reprobated as a lie ; for there is little use in softening down the hard name of a base vice, that it may be retained under a more harmless appellation. We should be careful at all times to speak with warmest approbation of people of strict integrity, who preserve it under trying temptations. But virtues easily and ordinarily practised should never be treated as extraordinary, but entirely as things of course. Many pious pathetic tales written for children are faulty in this respect.

As we must forbear threatening, so must we be sparing of reproof—too frequent censures harden rather than amend. Forbear also to make promises, still more forbear to exact them. Children acquire a contempt for truth by the habit of breaking their word. That is their promise 'to be good and never do so wrong again.' Instead of requiring a promise, if they offer to make one let them know how sacred is the obligation of one's word, and that it will not perhaps be so easy to keep it as they think, that when forfeited they lose our confidence, that we cannot trust, because we love, but that trust must be proportioned to merit.

Let punishments or corrections be varied in character, according to the character of the offence, and let it seem a natural consequence, lest the child become hardened by a repetition of the same thing ; should one for instance, behave ill at table, (which is a proper place for forming the manners,) let him leave it, because we cannot be incommoded by such conduct ;

by him to the Editors of the above Journal, who translated them for the benefit of their readers, and we now do the same, for the benefit of ours.]

LETTER I.

MY DEAR FRIEND—

You request me to point out to you in a series of letters my views upon the developement of the mind of children.

I am happy to see that you recognize the full importance of education in the first age of life ; an importance which has not been sufficiently appreciated to this day. The last age, and that in which we live, have seen the efforts of philanthropy directed towards the perfecting of schools, as well as towards the different modes of instruction which should be made use of in them ; and you doubtless do not expect that I shall seek to depreciate similar efforts ; I, whose life has been almost entirely employed in endeavouring to draw the greatest possible advantage from their combinations, and who have thus arrived at results which allow me to think that my labors have not been useless. Nevertheless, after an experience of more than half a century, and after the deep conviction that this experience has wrought in me, I can assure you, my dear friend, I shall never be able to regard our task as accomplished so long as our system of education does not extend to infancy. Now, in order to arrive at this happy result, we need have recourse to a powerful auxiliary, to the auxiliary the most fit to direct the efforts of man towards the end which divine wisdom has assigned to them, I mean *maternal love*.

Yes, my dear friend, this object of all our wishes we cannot obtain, but by the intervention of mothers. It is to them that we must address ourselves, it is through them that we must endeavour to realize the blessings of Providence, and it is in them also that it is necessary to seek to awaken that profound sentiment of their duty, which, in showing them the necessity of a self-denial without bounds, makes them discern at once the effects and the reward of it. May each of us take, in this sphere of influence, the active part which belongs to him ! Such is the prayer of an old man, desirous above all things of securing to the coming age the good which he may have been happy enough to do or to project. Your heart, I am sensible, cannot fail to be in agreement with mine, and I unite myself to you as to a friend who embraces with ardor a cause which is neither mine, nor that of any other mortal, but the cause of Him who wishes to see his children all brought back to him by the ways of goodness and love.

the consequences of transgression should fall on the guilty, and not on the innocent.

Vanity is another destructive passion early infused into the infant mind, and too little regarded. We have hinted at its origin in that self consequence inspired by over attention in the parent to the infant, and calling the attention of all present to its pretty play, and half articulated phrases. It is no matter of surprise that a charming child (and such to the parent they doubtless all appear,) should be an object of pride, and even vanity to its fond mother ; it is natural ; but it were to be wished that her own gratification would suffice, and that no artificial means should be used to render the child vain of itself. People appear to think too lightly of this many headed hydra. It is really a most unjust expression of self love, and insinuates itself into every department of the soul. Let us take early and constant care to turn the attention of children from self. The principal rule to be observed is to let them alone ; let them find their own amusement. Permit them to divert and employ themselves in their own way, with their own simple pleasures ; and as they proceed to learn a variety of things, let their attention be directed to something pleasing in the subject, and not to the praises and admiration they are to receive for the acquisition. ‘ Levity of character,’ says Madame de Stael, ‘ is the inseparable concomitant of vanity, and may lead to every thing bad in the world.’ Suffer children to be children, no art can make them half so attractive.

These remarks are meant to apply to the earliest years of life ; if the first seven years are regulated with due care and judgment in health, temper, dispositions, and passions, the succeeding process may be conducted with comparative ease.

[To be continued.]

Letters of Pestalozzi on the Education of Infancy.

[The Paris Journal of Education and Instruction, mentioned in another article, contains, in its successive numbers, a series of letters with the above title, which we hope to see finished, and which we shall endeavour to give to our readers. The originals were in the German language, and were addressed by that celebrated philanthropist, in the last years of his life, to a Mr Greaves of England. A copy of them was forwarded

by him to the Editors of the above Journal, who translated them for the benefit of their readers, and we now do the same, for the benefit of ours.]

LETTER I.

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Yes, my dear friend, this object of all our wishes we cannot obtain, but by the intervention of mothers. It is to them that we must address ourselves, it is through them that we must endeavour to realize the blessings of Providence, and it is in them also that it is necessary to seek to awaken that profound sentiment of their duty, which, in showing them the necessity of a self-denial without bounds, makes them discern at once the effects and the reward of it. May each of us take, in this sphere of influence, the active part which belongs to him ! Such is the prayer of an old man, desirous above all things of securing to the coming age the good which he may have been happy enough to do or to project. Your heart, I am sensible, cannot fail to be in agreement with mine, and I unite myself to you as to a friend who embraces with ardor a cause which is neither mine, nor that of any other mortal, but the cause of Him who wishes to see his children all brought back to him by the ways of goodness and love.

Happy should I be, were I permitted one day to speak through your mouth to the mothers of Great Britain ! Hardly can my heart contain all the joy inspired by the smiling prospect which presents itself at this moment to my imagination ! Yes, I feel myself penetrated with the most lively joy, when I seem to see the citizens of a great nation, equally quick in appreciating the glory of great enterprizes and the silent joys of domestic life, occupied with the well being of the rising generation, laying the foundation of the honor and happiness of those who are one day to fill their place, and securing by the moral education of their children at the same time the glory and the liberty of their country. What mother would not be deeply moved, to think that she also was to have her part in this immortal work !

The object, in fine, which we propose, is the developement of the mind of children, and the means which we are to employ, the aid of mothers.

Here an important question presents itself: Has a mother all the qualifications necessary for fulfilling the duties which we wish to impose on her ?

I am going to answer this question, and, as far as in my power, I shall answer it in a decisive manner. I only pray you to lend me a little attention, certain as I am, if your views conform to mine, of seeing you share my opinions, and admit the reasons upon which they are founded.

Yes, the mother is endowed, and endowed by God himself, with all the qualities which should render her fit to become the principal agent in the moral and intellectual developement of her child. No person desires more warmly than she the happiness of him to whom she has given birth ; and besides, what power could exercise so active an influence as *maternal love*, the most sweet and the most energetic of all the sentiments of nature ! Yes, a mother has all the qualities desirable for the task which is imposed on her, since Providence has given her the faculties the most proper to fulfil it ; and here I think it necessary to say in what this task consists.

Do not think that what I require of a mother is above her strength. I do not even pretend that she should have that degree of instruction and knowledge which we meet with in persons who have received what is ordinarily called a *good education* : not that I regard as useless an instruction which may one day turn to the profit of the children ; but that at the period of which I am speaking, all the acquired knowledge could not ren-

der the task of the mother more easy, and all that I wish in her is *a thinking love*.

Thus the first of her qualities should be an affection, lively, but modified in divers manners ; and if I think that a mother may give herself up to all her sentiments of tenderness, I think also that she should temper their ardor by reflection.

I shall therefore call upon this mother, in the name of all her love for her children, to reflect with me a moment upon the nature of her duties ; and let her not think that I wish to make her undergo the wearisomeness of a vain discussion, for maternal love would hardly recognise itself in the midst of the perplexities and obscurity of a philosophical investigation. It is to her sentiments alone that I appeal : in them there is a guide which will conduct her to the truth by the shortest and surest road. Let her not be ignorant, above all, that her duties are at once easy and difficult to fulfil. There is no mother, who, in occupying herself with the education of her children, does not regard as a sweet reward of her efforts, the mere pleasure of having surmounted the obstacles ; and if there are duties of which she is still ignorant, she will find them laid down in this sublime and imposing thought : *my children are born for eternity and have been confided to me only to bring them up and to render them truly worthy of being the children of God.*

Mother, should I then say to her, mother, upon whom weighs so mighty a responsibility, look around you ! What diverse vocations ! what different tastes ! Some pursue happiness through the turmoil of a life of action, others seek repose in the bosom of retirement ; and among so many actors who crowd around you upon the scene of the world, who is he whose vocation appears to you the most noble, the most imposing, the most sublime ? Without doubt you will say, it is he whose life is devoted to the moral improvement of the human species, happy in having thus to guide his fellow mortals towards eternal happiness ! Well, fortunate mother, this destiny is thine : and be not disturbed, nor shrink before this thought ; think you that I wish to place you in a rank too exalted for you ? Neither fear that my words may offer a bait for vanity. Ah ! rather raise a grateful heart towards him who has imposed on you the duties so noble, and seek to render thyself worthy of his trust. Above all, speak no more of thy little knowledge ; maternal love will supply it : speak no more of the limited circle of thy means ; Providence will take care to extend it : of the feebleness of thy faculties ; he who is power itself will know how to *give thee*

the necessary strength. Yes, it is to him that you may, that you should address yourself, for all that you still want, and especially to obtain the two qualities the most essential, *courage and humility*.
PESTALOZZI.

LETTER II.

MY DEAR FRIEND,

It will be sufficient, I think, that a mother feels the importance of the duties imposed on her, to make her bring to their accomplishment all the zeal of which she is capable, and seek to enlighten herself in relation to the end towards which she should direct the education of her children.

This end I have pointed] out in my first letter ; but there still remains much to be said in regard to the means to be made use of in the first period of education.

The child is endowed with all the faculties which are proper to human nature, but none of them is developed. *It is a bud which has not yet opened* ; and when the moment for it to expand has arrived, all the leaves display themselves, not one remains behind. Such should be the march of education. It is not for the development of a single faculty, but for that of a very great number, that it is necessary to watch with attention ; for it is upon their cooperation alone that success depends.

But how can a mother learn to distinguish and direct each faculty, whilst it has not attained a development sufficient to manifest its own existence ? By an attentive observation.

Indeed, I shall ask mothers who have observed their children, with the design only of watching over their health, if they have not remarked, even in the first period of life, a progressive growth of their faculties.

The first efforts of the child, although accompanied with pain, had nevertheless enough of pleasure to induce a renewal of action, which gradually increased and strengthened itself. It is only after these efforts, blind and imperfect as they are, that the hand begins to move in a manner more strong and more regular. From this first movement of the hand, from its first clasps, how long, how infinite is the succession of actions, of which it is to be the instrument ! sometimes applying itself to necessities, to the habits and wants of life ; sometimes exciting the admiration of men by some master-stroke of art ; and sometimes also giving stability to the fugitive inspirations of genius, in order to transmit them to the admiration of posterity ! The

first effort of this little hand, does it not thus open a vast career before a faculty which hardly begins to manifest itself?

The attention of the child is next excited by a great variety of external impressions. Does a brilliant color present itself to his eyes? and a noisy or animated sound strike his ear? immediately his ear and his eyes seem to seek the cause of these sudden impressions, his attention redoubles, and his features are not slow to express the pleasure with which his senses are affected. Doubtless these are the first signs of that intellectual activity, which will be seen in the sequel to apply itself to innumerable observations, to combine and connect events, to seek their still unknown causes, and to receive the agreeable or painful sensations which the various circumstances of life give rise to.

Every mother can recall to mind, what charm the first dawnings of reason and intelligence in her children have had for her. Did her heart ever know a happiness more sweet than that which she has experienced from these interesting manifestations of interior sentiment? Insignificant to all others, they are to her of infinite price: they reveal to her a future full of events; they mark out to her the history of a being more dear to her than life, and who seems to say to her in his silent but expressive language: *I am born for immortality.*

New joys are yet reserved for the heart of a mother, when the first looks of the child fix themselves upon her; those looks full of tenderness and soul which unveil an order so elevated in the scale of beings? The child is then worthy to receive the most precious gifts which have been bestowed upon the human species. Soon the voice of conscience will awaken in his soul, and religion will come to guide his tottering steps and to direct his view towards heaven. The certainty of a happiness so great fills the mother's heart with joy, and her child no longer seems to her to be only an inhabitant of earth. *Yes, cries she, yes, thou art born for immortality and for an immortality of happiness! I find the assurance of it both in the divine essence of thy faculties, and the love of thy God!*

Such are the first signs in which one should recognize the developments of infancy. The philosopher may consider them as subjects worthy of his meditations; he may take them for the basis of a system; but it is for the mother especially that they manifest themselves. They become for her as monitions from on high, as a source of good and of reward; and *what are all her cares and all her inquietude, when placed beside so much happiness?*

But here a new question presents itself : What direction is it necessary to impress upon these incipient faculties ? what are those which claim the most care and attention ? those which should be abandoned to their own natural development ? those, in fine, which are to have the greatest part in the future well-being of the child ?

The answer to the last question, it seems to me should be the heart ; and do not think that a mother can be so blind as voluntarily to occupy herself with the exterior and perishable advantages of her child, to the prejudice of moral qualities, and of his eternal happiness ; but she cannot for this be the less embarrassed in relation to the different importance of the faculties whose direction is confided to her, as well as to the degree of attention which it is necessary to give to each of them in particular.

The heart has without doubt the highest claims to her attention. But is not the child instructed and directed by the interior voice of conscience ? are not the inspirations of this conscience sufficient for him ? and has he need of particular instruction in order to resolve the great question of right and wrong ? Besides, will not the time arrive, when the truths of religion will come to confirm the interior sentiment, and to give to the child that moral elevation the idea of which is now much above his understanding ?

It would not be difficult to answer these questions, and to place the subject in its true light. But my intention is not to trace out for mothers a detailed plan of conduct ; and I regard it as highly essential that they should not be embarrassed by the requisitions of a system, whose principles being strange to them, could have no other effect than to alter their opinions and circumscribe their efforts, without convincing them of the fitness of the means offered for attaining the end proposed. Why should their sentiments be any thing else than the faithful reproduction of the sentiments of another ? why should they go to submit themselves servilely to rules marked out by a man, whose true intentions they perhaps could never fathom and appreciate ? Are they not mothers ? and would the Creator in making them the depositories of the secret of life, have left them destitute of the qualities necessary for directing that spiritual life, which is as the end and essence of all beings ?

I shall therefore content myself with urging mothers to consider life under its different aspects ; and whenever happiness shall present itself to them, not in appearance, but in reality,

I invite them to stop and inquire, not only wherein this happiness consists, but also from what causes it is derived.

It is more than probable that they will be little satisfied with their first investigations. They will regard it as almost impossible to find, among so many different pursuits, tastes and characters, subjects capable of furnishing the lights proper to direct them ; and turning their regards from the scenes of confusion, they will fix them with delight upon the object of their sweetest affections.

But, tender mothers, the more your children are dear to you, the more I insist on the necessity of attentively observing this life through which they are one day to pass. Do you find it filled with dangers ? it is yours to give to your children the means best adapted to preserving their innocence. Does it seem to you subject to error ? show them the magic torch which is to guide them to the sources of truth. Do you perceive through an appearance of life symptoms of nothingness and death ? hasten to excite in your children that intellectual activity, which, rousing their faculties, will incessantly operate towards their perfection, whilst all around them shall remain plunged in a kind of fixed stupor. In fine, do you wish to know the great lessons which may result to you from the experience of life ? cast your eyes upon those who are elevated above their fellow men. Truly you do not wish your children to be of the number of those, of whom one can say nothing but that they have lived and died. You would not wish that they should pass obscure and unknown through life, without distinguishing themselves by any of those qualities or actions which honor humanity. There is no class of society in which it is not possible to obtain the most honorable distinctions ; and however deep be the valley where grows a tree loaded with fruit, this tree is not the less agreeable to the weary traveller who reposes under the freshness of its shade.

In the ranks even the most obscure you will find men who have really distinguished themselves by the activity and zeal with which they have fulfilled functions little elevated in themselves, and who, by their talents and perseverance, have merited the attention and often even the respect of their equals and their superiors.

Other places in the most elevated ranks of society will attract your attention by the miracles of intelligence which seem to you almost supernatural. You will see them, by means common or limited, arrive at results truly extraordinary, direct

with ease the action of sovereign power, guide the wisdom of nations, sometimes even oppose themselves to the waves of popular fury, and force you perhaps to admire the triumphs of the human mind.

These actors so brilliant upon the scene of the world, are an object of terror to the greatest part of those whose destinies they wield ; but who dares refuse them the tribute of admiration due to their eminent qualities ?

Your connexion with the world will doubtless have placed before your eyes one or more of these, whose portrait I have here sketched. Well, are they all happy ? is there even a single one among them who enjoys true happiness ?

PESTALOZZI.

LETTER III.

MY DEAR FRIEND,

I do not wish to anticipate the answer of the mother. In all cases the most probable result of her researches will be that none of the individuals in question enjoy that true and unmixed felicity with which she would wish to endow the coming years of her child.

Perhaps then she will sigh at the imperfections of our nature, as well as the vanity of our tastes and our desires. Is it possible, she will exclaim, that in spite of all this power of genius, this extended intelligence, this strength of affections and sentiments, happiness lies still above our efforts ?

How is it possible ? This phrase has become of such common use amongst us, that we have almost entirely forgotten its primitive signification. This question we take little pains to answer in a suitable manner. We ask it of ourselves, and nevertheless knowingly recoil from the obligation of giving a plain and precise answer. But it is now necessary to act in a manner altogether different. It is necessary that the mother examine with attention the nature of this possibility, and she will not be slow to see how far she has approached this truth which makes the object of her inquiries. She will understand that physical qualities however brilliant, intellectual capacity, however vast, the qualities of the heart and mind, however exalted, can never embrace alone all the elements of human felicity. And here I ought to point out an error which is usually committed in education, not less than in the judgment formed of men and things.

What can be the real utility of the greatest efforts, so long as they are not directed by just ideas, by an elevated mind, by

great intelligence ; above all, so long as they are not inspired by the noblest sentiments of the heart, or founded on a firm and invariable will ? What also can be the utility or the merit of the most ingenious and the most sublime conceptions, if the vigor of execution does not answer to the power of imagination ; or if even, by uniting and combining these two valuable qualities, we direct ourselves towards an end little worthy of ourselves and little favorable to the interests of humanity ? It is then very evident that physical and intellectual faculties could not take the place of the qualities of the heart.

The heart is in fact, the true basis of human felicity. I ought nevertheless to fortify you against a too easy mistake, by portraying to you here a character calculated to deceive you, and which presents itself so often in the career of life that no person, I think, can deny its existence. I mean that man, whose mind is full of the best intentions, whose heart embosoms the most benevolent dispositions, and whose active and indefatigable zeal is always ready to promote and encourage all enterprises which have for their object the happiness of his fellow men. What need have I to name to you every one of his admirable qualities ? So much goodness, mildness and humanity must strike your eyes with an irresistible charm. Nevertheless, it is a fact too often confirmed by experience, that this assemblage of precious gifts may put forth nothing but a vain splendor ; and that this man, so happily organized, may live useless to others and useless to himself, and not enjoy that happiness even which is regarded as inseparable from virtue.

The reason is evident. The heart may have operated for a long time with activity, but for want of having been united to the other faculties of human nature whose cooperation is equally important, it has not been able to produce the degree of *vitality* and of force which are necessary for arriving at a given result. The faculties of man ought to be cultivated in such manner that no one may predominate at the expense of the others, and that they may all move with uniformity around a common centre of activity.

I may be permitted to enlarge still further upon the principal result of these important truths, and to say to mothers, whilst you find an inexpressible charm in contemplating the first efforts of your children, forget not that there lie the germs of future action, and that you should make them the subject of a long train of reflections. Indeed, God has endowed your children with all the faculties inherent in our nature, but nothing is

yet decided on the point the most essential. 'This heart; this mind, these hands,—how to employ them? towards what end to direct their action? The answer to this question contains a whole future of happiness or of misery for days which are precious to you.

'God has given to your children an *intellectual nature*; he has planted in them the voice of conscience; he has done more; he has granted them the faculty to understand this voice; and in directing their regards towards heaven, he has wished to teach them by that alone how high is their destiny, and what difference there is between them and other creatures whose eyes are unceasingly fixed upon the earth, their only country.

'It is not then for the earth, it is for heaven, that your children were created; but what is the road which shall conduct them to their destination. No mortal could point it out to them, if the divine goodness had not revealed it: nevertheless, it is not enough to know it; they must be taught how to walk in it.

'You are doubtless not unacquainted that God formerly opened heaven, and showed to an ancient patriarch a ladder which led to regions above the skies. This ladder, prepared for all the descendants of the first man, is also prepared for your child; but you ought to teach him to make use of it, and not to permit that he should dare to climb this difficult route under the mere inspirations of the mind, or the impulse of the heart; but to proceed in such manner that these various powers may combine and act together: success will then be no longer doubtful.

'Now these powers are in him, and your duty is to make him use both the one and the other. Have then always before your eyes the mysterious ladder which conducts to heaven, that ladder on which your faith should repose, and where you may see ascend and descend without ceasing the angels of *hope and love*.'

PESTALOZZI.

LETTER IV.

There is in a child an active power, whose divine influence has for its object to make our nature participate in the greatest felicities which are reserved to us. Still more, this hidden power is not in a state of torpor, like the other faculties in the mind of the child. Indeed, while the latter exhibit the image of utter impotence; while their first efforts, their first developments, are accompanied with pains and difficulties, the other displays from the first the highest degree of energy and intensity to which it is permitted to attain.

I am aware that this principle, which I call the principle of *faith* and *love*, is generally designated by the name of animal instinct ; but I cannot refrain from regarding the instinctive action of the child, in the first moments of existence, as a precious gift of divine providence ; and it seems that the Creator wished thereby to show to the human species, even in its primitive forms, what ought to be the successive developments of its divine nature, whence is the germ of the most sublime virtues.

The infant is obedient, active, patient, I had almost said, wise and pious, even before he has been taught to appreciate the nature or the merit of these qualities. It is thus that by a sort of revelation the child receives, from the most tender age, the principles, and as it were, the presentiment of the high degree of elevation to which the soul may attain. Is not the sacred sentiment of gratitude active in the heart of the child, at the moment when his first sufferings are alleviated, or his first wants satisfied ? Is not that divine power of *sympathy* in action also, which, superior to the fear of dangers and death, manifests itself in every feature of the child, and would make him renounce life to spare a pain to his mother, even before he can conceive what sympathy and death are ? This act of self denial, whatever may in other respects be its immediate object, is like a first step towards the sentiment of the most noble virtues ; and even in the arms of his mother, the child seems inspired by the secret principle which he does not comprehend, but which should become to him a second nature, and which, at its highest point of development, ought to produce the most sublime effects of devotedness.

In giving to this principle, when it manifests itself in the first period of life, the name of the principle of love and faith, I am well aware that these expressions might become the subject of dispute for some, perhaps even of derision for others, and I confess that I should be truly grateful to those who would have the goodness to give me other terms more proper to express the ideas than have been suggested to me on this subject by many years of attentive observation. Further, I do not suppose that one would pretend to deny the fact, in merely stumbling upon the impropriety of the terms which I may have employed to state it ; and I am going to express my idea in such a way as not to leave the least doubt relative to an object towards which I wish to draw the attention of all persons occupied with education.

Doubtless no one will deny that by treating children with mildness the chances of success are greater than by using every other means. Now this is the only concession which I ask ; and it is upon this simple and incontestible fact that I am going to found the principles of my views upon the development of infancy.

If mildness and kindness are the best means of success, must there not be something in the child that responds to the appeal which you make in employing them. Indeed, these sentiments are what is most conformable to his nature, most proper to excite sympathy in his soul : and whence comes this ? I do not hesitate to say that it must be attributed to the author of all that is good. We shall have new reasons to convince us of it, provided we observe in what manner this power of goodness acts upon the mind of the child.

If the child were moved only by the instinct of self-preservation, if his attachment for his mother were founded only on the sense of his own weakness and of his physical wants, upon the comforts procured to him by this mother, always attentive to succour and protect him ; if these were the only causes of his smiles or his affection ; in a word, if the child were a selfish creature only, whose interested calculations made every thing turn to his own profit, then, truly I should cease to speak of divine seeds planted in his heart ; then I should cease to address myself to the mother as the principal agent in the cause of humanity, and should no longer exhort her to well fulfil the task imposed on her, nor to seek the means the best adapted to facilitate its accomplishment. Her duties would be much more limited, and every means would be sufficient, without doubt, to bring up and maintain her child in that cold and unnatural selfishness, which she herself carries in her bosom under the deceitful mask of maternal tenderness.

But let the mother herself tell us what she thinks of such a doctrine ; let her tell us if she is not persuaded that it is God who has placed in her heart this sentiment of maternal love ; let her tell us if she does not feel herself transported towards God, whenever her affection rises to its highest point of strength and intensity ; and if it is not this sentiment which alone renders her capable of devoting herself without relaxation to the accomplishment of her duties, and to make a habit, so to say, of this generous self-denial, which we may well pourtray, but which a mother alone can comprehend, because she alone can give herself to it. Let this mother tell us then if she is not

convinced that there is also in the heart of her child something better than selfishness, and if the sentiments of gratitude, of confidence, and attachment, have not been placed there as in her own by our divine father.

I know there is a cold and withering doctrine, which, without denying the existence of this sentiment, regards it as a deception salutary and proper for encouraging the mother in the accomplishment of her duties. This doctrine I disapprove ; but I add, that I do not intend to charge it as a crime upon those who have adopted it. I mean only that I am far from sharing their opinion ; and that I can never believe that, in order to disguise the difficulties of a duty naturally full of charms, *God, the God of truth, has placed a lie in the heart of a mother !*

PESTALOZZI.

LETTER V.

In this letter and some of those which follow, I propose to set forth the facts which may be considered as the first manifestation of the good principle of which I have already spoken. I shall then point out the common mistake which makes this principle to be entirely misconceived, or which, subjecting it to injurious developments, changes its purity, and instead of making it serve for our moral elevation, renders it fit only to corrupt the most noble faculties of human nature.

However disagreeable it may be to dwell upon such a subject, it is not the less necessary to go back to the source of all the weaknesses, intellectual or moral, to which we are subject. It is not the less indispensable to convince mothers that purity of intention is not always sufficient as the moving principles of the means employed ; and that, acting even under the inspirations of the most active benevolence, they may, for want of reflection or judgment, plant in the heart of their children those seeds of corruption and misery, against which they are seeking on the contrary to fortify them.

But, if whilst we are traversing the vast field which now lies before us, too frequent examples force us to deplore the ignorance of some or the indolence of others, it will doubtless be a great cause of satisfaction to us, to think that the means of removing the evil and of securing the greatest sum of happiness possible, are not beyond the reach of a mother. Indeed, whenever I have met a mother who distinguished herself by the assiduous cares which she took of the education of her children, and by the success she obtained, I have observed that the principles ac-

• cording to which she was accustomed to act, and the means which she made use of, were not the result of long and painful researches, but rather that of a resolution purposely made and constantly followed, not to take a single step without stopping a moment to reflect. On the other hand, I have not perceived that this manner of acting has thrown her into that state of continual anxiety or agitation, in which the mother often finds herself, who calculates, continually and with the most lively apprehensions, the consequences even the most remote, of a crowd of insignificant circumstances.

This state of inquietude, which throws the mind into confusion when it is so important to keep it calm in a good system of education, has generally for its first cause a want of will. Nothing on the contrary is better adapted to preserve this necessary calm, than a wise exercise of judgment and the constant habit of reflection.

Philosophers may possibly regard this subject as little worthy of their attention ; but I am fully convinced that a mother will not refuse to follow us in our considerations upon the state of the child from his birth.

That which is most striking in this first age, is a state of the most perfect weakness. The first impression seems to be a sense of pain, or at least a sensation of uneasiness. Nothing has as yet awakened any faculty, except those which are inherent in the physical nature of man, and even these are in the first period of their development.

There is always in this purely physical nature an instinct which acts with a sort of discernment, and which grows and becomes strong in proportion as the functions of animal life are repeated and renewed. It is well known that this instinct makes the most rapid progress, and that it soon reaches its highest point of power and intensity, before any care has, so to speak, been taken to protect the child from the dangers which surround it, and before any other powers have been given to it than those which it finds in ordinary nourishment. It is besides a well known fact, that among savage nations the animal instinct of children is fully active, and develops itself with a rapidity which sufficiently demonstrates that this faculty of our nature follows a similar course in man as in animals.

But, whilst we give all our attention to this faculty of human nature, a faculty which in the first period of life asks but little care, we are too prone to neglect a principle, which, at first feeble and almost imperceptible, demands by its very weak-

ness our cares and our assistance, and seems to make it our duty to interest ourselves in its developments, which are the most acceptable rewards for our efforts.

Indeed, however striking may be the resemblance of which we have been speaking, nothing could excuse us, in mistaking the difference which exists, even in the first days of life, between the child and the animal. It is true that the latter seems to have made the most rapid progress, and appears much superior in relation to the faculties which constitute animal life ; but there all his perfectibility ends, and he will never pass that degree of strength and sagacity to which his instinct has so rapidly carried him : for, during his whole life, his power, his enjoyments, and if I may be allowed the expression, his capacity, must remain stationary. An advanced age, or other unfavourable circumstances, may indeed make him lose something of his faculties ; but nothing can ever extend the point of physical perfection to which he at first arrived. The acquisition of a new faculty, or a mode of action in addition to those which he already possesses, is an event yet unknown in the natural history of animals.

The case is not the same with man. There is something within him, which, at the appointed time, will not fail to manifest itself, by a series of facts entirely independent of physical life ; and whilst the animal is constrained to obey that instinct which constitutes his safety and his strength, something informs man of his rights and his power, and makes him understand that, as sovereign regulator of his purely physical faculties, he ought to advance towards results proper to secure to him the first rank in the scale of moral and intellectual beings.

The Creator designed that the brute should follow the instinct of his nature ; but man obeys a principle more elevated, and *his animal nature* should act upon him only until *his spiritual nature* begins to develope itself.

In my next letter I shall designate the period at which the first signs of this intellectual nature should manifest themselves.

PESTALOZZI.

LETTER VI.

I have often heard it said that there is nothing more humiliating than the first condition of man, when he enters this world, a feeble stranger, equally incapable of making known his wants by speech, and of satisfying them by the resources of intelligence, or, in fine, of exhibiting the least sign of that reason which is the noble prerogative of his species.

I admit that all this is very proper, by recalling to us the weakness of our nature, to put us on our guard against a vain confidence in our own strength. I think also that it is well to encourage every reflection which can carry back our recollection towards a state which we are too prone to forget. But although such a consideration may be little flattering to our pride, I do not see what it can have so singularly humiliating.

Let us suppose, if you please, the case the most favourable to the observations of which I have just spoken. Let us suppose that a sufficiently long time has passed, before the child shows the least indication of faculties superior to those of animals deprived of reason. Let us add, that no animal is physically more feeble than the child, even for many days after birth, and that thus the life of man is, in its beginning, above the existence of other animals.

Not the less for this do I persist in maintaining that, in a moral point of view, there is nothing humiliating in it.

Man placed on a level with the brute ! This is undoubtedly enough to shock all those, who look with any pride upon the moral character of human nature ; but what is this species of humiliation, compared to the fact to which I am going to call your attention ?

Is there any one who does not perceive an immense difference between this state of animal existence which is to be succeeded by the manifestation of intellectual life, and that moral and in some sort responsible existence, in which the powers of the understanding are already exhausted or annihilated ? In the first case, we rise progressively ; in the second, we march towards a degradation whose fatal progress nothing can check. Before the torch of intelligence has shone forth for us, before conscience has made us to hear its voice, error and corruption are equally impossible ; but it is when the one has lost all its light and the other all its authority, that we may deplore the blindness and frailty of the human species.

Instead, therefore, of stopping at this absence of a moral and intellectual principle, let us seek to know the period of its first development. Instead of undervaluing the work of the Creator, let us admire that goodness and wisdom with which he opens, when he sees fit, the eyes of his creatures, and discovers to them at once a material world full of wonders, and a celestial world full of felicities. Instead of complaining, and accusing him of not having created us more perfect, let us ex-

amine rather how far we are still removed from that perfection which he has nevertheless placed within our reach.

I have dwelt a little on this subject, because it too often gives place to reflections and remarks, the apparent justice of which might tend to weaken the zeal and affection of mothers. What I desire, what I ask above all, is, that a mother have recourse to her own heart and her own experience, rather than the sophistry of those who cannot think and feel as she does.

Let her then consider the being which she presses to her bosom as being destined to an existence superior to that in which he claims from her those succours which Providence has put it in her power to grant. Let her not be content with obeying that instinctive affection which does not permit her to be indifferent to the wants of her infant ; let her extend her view to the time when, in the heart of this child, there shall awaken at once both the sentiment of its duties in this world, and the hope of happiness in the other ; above all, let her not forget that, since such is the destiny of her child, it is on her that the task is imposed of aiding it, of sustaining it, and of teaching it to surmount the greatest difficulties that it can meet with in its career.

And when the first weeks shall have passed, that time of painful anxiety for her and of blind weakness for her child ; when she shall feel her strength to be wearied and attention to languish in discouragement, she will then have need of something to come and reanimate the scene, rekindle her affection, and excite anew her efforts.

And she will not be deceived in her waiting ; for the day will come when the child will no longer claim from her those succours and those cares, so necessary to the satisfaction of its physical wants ; the day will come when his look will seek the look of his mother, and will comprehend its mute language ; when maternal tenderness, now better felt by him, will come to give him a new life, and to call the first smile to his lips.

Then also commences a new era in the existence of the child, and a new world opens upon his eyes. What an immense step he has made in the career of life ! By his late efforts he has entered into possession of the rights belonging to his nature ; he has acquired a true superiority over all other beings of the creation.

The smile of joy, the tears of sympathy, are denied to other animals. Man alone is endowed with them. These precious faculties constitute a dumb language, which is common

to all, and which all may understand, because all can feel. They are the first manifestation of a sensibility which belongs exclusively to man. Certain signs of our interior emotions, they have an expression which it is impossible to mistake. The character of these emotions may change ; it may be momentaneous or permanent; their object may vary to infinity; but the signs of their manifestation are always the same ; and in the whole course of life, they remain the incorruptible interpreters of our sensibility, whether it show itself in silent grief or sweet serenity, whether it rend the soul by the most cruel anguish or fill it with happiness the most pure.

PESTALOZZI.

[To be continued.]

ART. V.—*Encyclopædia Americana. A Popular Dictionary of Arts, Sciences, Literature, History, Politics, and Biography, brought down to the present time ; including a copious collection of Original Articles in American Biography ; on the basis of the seventh edition of the German Conversations-Lexicon.* Edited by FRANCIS LIEBER, assisted by E. WIGGLESWORTH. Vol. I. Philadelphia. 1829. Carey, Lea, & Carey.

ALTHOUGH it is the principal object of this Journal, to give information respecting improvements in modes of education, and to furnish such notices of elementary books, as will promote the use of those only which are valuable, yet we regard every work as having some claim on our attention, that is adapted to exert an extensive influence on the literature of our country. We believe the work before us to be of this character. It is suited to the wants of every reading family ; its size is convenient ; and its price is so moderate, as to come within the means of immense numbers.

A few persons object to the use of Encyclopædias, and other abstracts of knowledge, on the ground that they are often made a substitute for the detailed information contained in other works ; but it is said, on the other hand, that the general facts contained in these abstracts excite curiosity and a desire for more exact knowledge. However this may be, it is certain that every reader needs books to which he can refer for general facts ; and no other book for reference is so complete, as an Encyclopædia.

The various departments of literature and science are so intimately connected, that no one can be well studied, without some general knowledge of many others. To understand any book, much information is requisite, which that book does not give. Allusions to history, biography, geography, and every subject of general literature, together with the various arts and sciences, are so frequently made, that none but the learned fully understand the most common publications, or the conversation of well educated society. In all these departments of knowledge there are certain leading facts and principles, which are thus commonly alluded to, and which, therefore, should be generally known, or should be within the reach of every person. These leading facts and principles give that general information, which is wanted in the mind, or at hand, while pursuing every study, and attending to the details of any branch of literature, science, or the arts. To furnish these facts, is the object of an Encyclopedia.

We have made this simple statement for the benefit of that small portion of our readers, who may be supposed imperfectly acquainted with the character and uses of such works, as we are recommending; and we shall continue our remarks in the same humble strain, and leave to journals of higher pretensions their proper task of learned criticism.

In the Journal of Education for July and August, we gave an extract from the preface of the work before us, from which our readers will infer that Dr. Lieber possesses the best advantages for making his work complete. Some further information of the same kind is furnished in the following paragraphs.

‘For the plan of this Encyclopedia we are indebted to the late Mr. Brockhaus, a bookseller of eminence at Leipsic, who was the publisher, and, at the same time the principal editor. He called it the *Conversation-Lexicon*, as being a work chiefly designed for the use of persons, who would take a part in the conversation or society of the well-informed circles. The character of the work, however, has been, to a certain degree, changed by numerous improvements in each successive edition; and its original title has therefore ceased to be strictly appropriate. But, as the book had become well known, and gained its well-deserved popularity, under that name, it was thought inexpedient to reject its original appellation: it is accordingly included in its new title—*Allgemeine deutsche Real-Encyklopædie für die gebildeten Stände. (Conversations-Lexicon.) Leipzig: F. A. Brockhaus. 1827—29.*

‘The value attached to this undertaking of Mr. Brockhaus is

evident from the fact, that about 80,00 copies of the work, now consisting of twelve volumes, have been published since 1812; besides which two pirated editions have appeared in Germany. There has also been a Danish translation (published by Soldin, Copenhagen), a Swedish, and likewise a Dutch, (published by Thiene, at Zutphen). A French translation is also preparing at Brussels. More than two hundred contributors are enumerated in the preface of the original, of whom we will only mention a few, whose fame is by no means confined to the limits of their country:—G. W. Becker, in Leipsic; Chladni, in Kemberg; Gruber, in Halle; Hassel, in Weimer; C. H. L. von Jakob, in Halle; Niemeyer, in Halle; Oken, in Munich; Kurt Sprengel, in Halle; von Aretin, in Amberg; W. Gesenius, in Halle; F. Jacobs, in Gotha; J. S. Vater, in Halle; Paulus, in Heidelberg; K. W. Bessel, in Königsberg; Fr. Mohs, in Freiberg; Schubert, in Erlangen.' pp. iv, v.

We cannot desire more full evidence that this important work is undertaken under suitable advantages, than is afforded by the preface. Its having been first published in Germany, where it commanded the learning of the most learned men in the world, gives it a value which it could not possibly have been made to possess, if it had been written in this country. Most of the articles are of such a nature, that the leading facts in relation to them, must always remain the same; and, for these, we may surely rely with most confidence on the scholars of Germany. Almost every subject which has not particular reference to America, can be treated of under greater advantages in Germany, than in the United States; but in relation to every subject concerning this or any other country, Dr. Lieber has at command what the genius and learning of the United States can supply. The character which this gentleman has established during his short residence in this country, would be considered by those who know him as a sufficient guaranty for the honest and faithful improvement of every means for perfecting the work, without an endorsement of the Publishers, Messrs. Carey Lea, & Carey. But in addition to all these, we have one twelfth of the work as a sample; and we find it executed to our entire satisfaction. These are some of our reasons for recommending the Encyclopædia Americana; but we shall be expected to be more particular; and shall therefore describe the work in this and subsequent articles, in a manner to satisfy our readers, whether it is suited to their means and wants.

This Encyclopedia is to be printed in *twelve volumes*, at *two dollars and fifty cents* a volume. A volume is expected to ap-

pear once in *three months*. Those, who can, by any honest modes of economy, reserve the sum of two dollars and fifty cents, quarterly from their family expenses, may pay for this work as fast as it is published ; and we confidently believe that they will find at the end, that they never purchased so much general, practical useful information, at so cheap a rate.

In other Encyclopedias we find too much attempted and therefore too little effected. By trying to say something about every thing, they have too little room, within a tolerable number of volumes, to say anything well. We do not go to an Encyclopedia for the minutæ of any science, but to regular treatises on the several sciences. As very few persons have any use for treatises on Anatomy ; and as those who need them, can be better supplied than it is possible for them to be in an Encyclopedia, this article deserves little attention in a work of this kind. In the book before us, about a page is devoted to this subject. Algebra occupies about a page and a half ; arithmetic, less than half a page. This will show how such subjects are to be treated in this work.

Treatises on architecture are less common ; and most persons want a book to tell them more than they know, or have ready means of learning. On this subject we here find more than ten pages ; and this will serve for a sample of articles of this class. In biography all readers want more extended articles than in most other departments. Accordingly we here find about nine pages on Benedict Arnold, of whom we know little by common biography. About one page is devoted to Fisher Ames, whose memoirs and writings are well known. A page and a half are devoted to Aristotle ; a little more than half a page to Archimedes ; a page and a half to Samuel Adams ; and seven and a half pages to John Adams.

Our readers will recollect that we have now only the first volume to refer to ; and we have no doubt that they will form a favorable opinion of the attention given to this department of literature, from the statement here given. We have not room for specimens of American Biography ; but those who know the talents of Mr. Walsh, will not doubt that his contributions will be honorable to our country.

Our remarks upon the manner of treating the few subjects which we have mentioned, are designed to indicate the general plan, according to which this work is executed. We have not now time nor space for further remarks ; but shall take notice of the subsequent volumes when they are published. We shall

now only add, that the more fully we examine this volume, the more full is our conviction, that this Encyclopedia will be found admirably adapted to the wants of the American people. We can discover no trick ; no book-making artifice ; no narrow party or private ends involved. The preface, the specimen before us, the reputation of the editors and proprietors, all tell us plainly that the work will be well executed ; and we have perfect confidence that all who examine it will form a more favourable opinion of its merits, than any can derive from our description and recommendation.

ART. VI.—*An Introduction to the Study of Grecian and Roman Geography.* By GEORGE LONG, Esq. late of the University of Virginia, now of the University of London; and ROBLEY DUNGLISON M. D. of the University of Virginia. Charlottesville. 1829. F. Carr & Co.

THE study of Geography, in itself one of the noblest and most comprehensive branches of general philosophy, so simple indeed as to be very fitly placed among the earliest objects of attention to children, yet so wide as to occupy a great portion of the care of the best read scholar, is only beginning to gain its right estimation and obtain its proper rank. Herodotus and Strabon seem to have had a more worthy conception of its importance than has until very lately been entertained among the moderns. The former, an honest and communicative traveller, who visited all parts of the earth most deserving to be seen, has contrived in a few introductory books to give us more extensive and more curious knowledge of the condition of the world than it would be easy, in so flowing a style, to communicate in a far greater space than he takes, in any language but his own. Scarcely any thing escaped his attention, and though he has had the fate to be disbelieved almost unanimously for nearly two thousand years, he is likely to have most of his incredible stories about Africa proved true by the diligent search of the English and French travellers, rediscovering and disinterring, what has so long been buried in the sands of ignorance, barbarism and the Lybian desert. The faithful Strabon kindles with honest enthusiasm at the view of the dignity of his subject

and the various accomplishments necessary to a good geographer.

'The various knowledge,' says he, speaking of the manner in which his art should be treated,' by means of which alone such a work can be well accomplished, 'belongs to him only who grasps within his view what is rightly called philosophy,—the science of the operations of nature and providence, and the works of men. So, indeed, its advantages, so manifold in the concerns of states and of governors, in the knowledge of the phenomena of the heavens, of animals, plants—the products of sea and land, and of whatever else is any where worthy of notice, cannot be rightly felt but by such a man, one interested in all the arts and enjoyments of life.' *

With what satisfaction does he dwell upon the scholars of older times who had cultivated his art, beginning with Homer, the father of geographers as of poets, and Anaxamandrus who first made a geographical map,† the acquaintance and townsman of Thales.

Without the knowledge of climates, how, he asks, shall the geographer know whether Babylon or Alexandria in Egypt be farthest north ; or, without the knowledge of eclipses, how they differ in longitude ? without geometry he cannot measure the earth. He must be acquainted with politics, arts, mathematics, physics, familiar with history, not ignorant of mythology, for he must be able to entertain as well as instruct ; but especially, he repeats, must he be versed in astronomy and geometry.

How many writers on geography in our own time, have come up to the requisitions of the old Greek, may be judged of by any one who will take the trouble to look into the multitudinous books, large and small, upon the subject, which are almost daily hurrying from the press. In the midst of this nameless and soon forgotten crowd, it is gratifying to be able to fix upon one which shows us that the modern advancement, which we so often hear spoken of, is not, so far as relates to geography, altogether a vain boast.

The work before us is contained in a small volume, of very modest pretensions part of it being 'the substances of some lectures that were read in the University of Virginia, in the autumn of 1827 and spring of 1828.' The compiler, as Professor Long calls himself, gives ample credit to Heeren,‡ on whose work he professes entirely to have founded several of the most

* Strabon, page 2. † Idem. p. 7.

‡ 'Ideas on the Policy and Commerce of the Principal Nations of Antiquity.'

important chapters, and apologizes for errors and omissions by alleging his other engagements, the very limited time he had, and the small stock of books of reference to which he had access. The apology, so far as the book is concerned, is unnecessary; for he who makes a book better suited to its purpose than had before appeared in the language, is not called upon to give an apology. The generosity of a scholar of Prof. Long's reputation, in leaving behind him with the pupils, for whom it was written, a work which he saw to be imperfect, at the time he was going where he would have ample means of rendering it complete, is something we hope, better than an apology.

One of the advantages which this treatise has over most others that have been made for the same purpose, consists in the prominent place which is given to the polity and commerce of the ancient nations, during the period which the view embraces. Before the work of Heeren these had never received the attention which they deserve. That work, from the language in which it is written and its size, is inaccessible to the greater part of American scholars. Prof. Long gives us, in a moderate compass, what he considers the most important views of Heeren, combined with much that is curious in the monuments of arts, customs, revolutions, productions, &c. and in the races of the ancient nations, and adapted to a particular purpose, exceedingly interesting to the scholar, which is 'to illustrate the extant (Greek) writers who are worth studying.' What is said of the Asiatic nations, and the African, except the Carthaginians, relates principally to their condition before the time of Alexander. The Grecian geography has chief reference to the same period. The Roman is more modern.

The great object of the Treatise, the illustration of the Greek and Roman authors, is, considering its length, most fully accomplished. Every part of the work abounds in marginal references to original authors, very full and very exact. So full indeed are they, that by turning to the passages referred to, you may often, page after page, trace every important fact to its original authority, and possess yourself entirely of the grounds and be able fully to appreciate the reasonings and deductions of the compiler. Facts and illustrations drawn from

*We regret that this gentleman could not have found it convenient, before his departure for his native land, to visit our quarter of the country, where he would probably have found no difficulty, in the libraries of our university and of this city, in supplying the want of materials which he suffered so much from among the recently formed libraries of the south.

modern travellers and from the existing remains of art, are introduced whenever they can throw light on or give interest to the ancient authorities.

It would be an agreeable task to go over the different parts of the work and show, by quoting freely, how interesting a work on geography may be made. A few passages taken from that portion of the work which seems to be peculiarly Prof. Long's, the Grecian Geography, will suffice to show how skilfully the mention of historical events, of facts in physics, illustrations from modern travellers, and references to ancient authorities, are combined.

In speaking of Phocis and Locris, he says—

‘The summit of Parnassus was called Lycorea, now *Liakura*: it is considered inaccessible, and “the peak is covered with perpetual snow,” according to Hobhouse, but other travellers have seen it bare. Delphi was one of the places at which the semi-annual meetings of the Amphictyons were held; Thermopylæ was the other. This singular spot, from the union of religion, political power, and a considerable trade, possessed probably more wealth and more specimens of fine arts than any other town in Greece. Athens, perhaps, may be excepted. Pausanias, in his Phocica, has described the paintings, bronzes, and other works of art, which existed in his time.’ pp. 134, 135.

‘The elevation of the chief mountains in Greece is not exactly known: the central chain of Pindus is conjectured to reach the height of seven thousand feet. Olympus on the coast of Thessalia, is said to be above six thousand feet high, and Parnassus may perhaps attain to nine thousand feet. The height of the mountains in the Morea cannot be correctly stated at present. They are supposed to be lower than those of northern and central Greece. The most striking characteristic of this country is the great limestone formation, generally of a whitish or bluish gray color, which occupies nearly all the surface: to the numerous caverns, large springs, subterraneous streams, and other peculiarities that accompany this formation, we may trace many of the ancient superstitions which the imagination of the Greeks invented and adorned.’ p. 116.

Who would expect to ask in vain for the height of some of the mountains in a country the longest and once most fully civilized of Europe?

‘Arcadia is the central province of Peloponnesus; it is a mountainous country and contains the sources of most of the considerable rivers which flow into the seas surrounding the Peninsula. From its elevated situation, and the broken face of the country,

intersected by small streams, it has a cold and foggy climate during some seasons ; in the plain of Argos, only one day's journey distant from the centre of Arcadia, the sun shines and the violets bloom, while snow is on the hills of Arcadia, and in the plain of Mantinea and Tegea.' p. 120.

'Some of the mountain streams in this district are lost in deep caverns, or catabathra ; the plains are level and the mountains rise all round like a wall, leaving for these streams no passage but under the rocks. The plain of Orchomenus contains a lake, with no visible outlet, which rises with the melting of the snows and the descent of the rains. Orchomenus, now called *Kalpaki*, must be distinguished from a town of the same name in Bœotia. In another plain, north of that of Orchomenus was Pheneos, now *Phonia* : here is a magnificent causeway across the plain, it is mentioned by Pausanias, who describes also the appearance of a water mark, shewing the elevation of the waters of a neighbouring lake, by which Pheneos was once destroyed. Gell says that this mark is still visible.

'Near Pheneos, to the east, is the mountain Cyllene, now *Zyria*, supposed to be the highest mountain in the Morea. A little to the southeast of Pheneus is the lake Stymphalus which flows into a remarkable chasm and appears to sink there. Near this place is a singular tumulus; or mound, described by Homer and by the geographer Pausanias, in the second century.' pp. 121, 122.

'About midway between the Alpheus and Pylos was Scillus, where Xenophon lived after he was banished from Athens. He bought an estate here with the money he acquired in his expedition with Cyrus, or rather during his retreat. Here he spent his time in hunting, seeing his friends, and writing the history of his own times.' p. 124.

'In the northern part of Argolis is Nemea, where is a temple of Jupiter at which the Nemean games were celebrated. South of Nemea are the ruins of Mycenæ, now *Krebata*, situated between two peaked mountains : they are still more remarkable than those of Tiryns,—the stones are of an enormous size, but shaped so as to fit with some degree of regularity. The two lions in relief which Pausanias mentions, still exist, but without heads : they are cut on one stone nine feet high and thirteen broad, and are the oldest specimens of Grecian sculpture that have been found.' pp. 125, 126.

'Galatia received this name from a body of Galatæ, or Celts, who invaded and seized the country B. C. 278 : they were a remnant of the barbarians under Brennus who attempted to rob the treasury at Delphi : their language might be recognized as Celtic for many centuries after. Pessinus, in this province, on the Sangarius, possessed a temple of the mother of the gods, and,

as a necessary consequence, a very well regulated market. 'The kings of the family of Attalus ornamented the place with a shrine and porticos of white marble.' p. 176.

The following passages may be taken as favourable specimens of the philosophic spirit, for which the whole work is distinguished:
On the subject of Greek colonies;

'It may not be out of place to make a few remarks on the causes which led the Greeks to emigrate, and settle in countries which the imperfect arts and navigation of that age made them consider remote. One of the causes which probably operated more constantly than any other, was the increase of the population beyond the means of comfortable subsistence, which the several states could supply. This fact modern writers on ancient history have paid little attention to, and have consequently magnified other causes beyond their proper importance. Thucydides says, that the Ionian colonies in Asia Minor, were the result of the great increase of population in Attica, which was not able to support all her citizens. Attica was, at no time after the establishment of her great navy, fertile enough to provide food for all who lived in the state. Eubœa, at an early period sent wheat to Athens, and, in the time of Demosthenes, the rich lands on the north of the Black Sea furnished her with food, as they now do other countries where bread is dear.

'It is impossible not to remark the excessive eagerness with which the Athenians seized and colonized the small islands of Ægina and Melos; the one after expelling all the inhabitants, the other after murdering all the males. The number of small independent states into which Greece was divided, joined to the hostile feeling that always existed among them, rendered emigration from one state to another frequently impossible, and seldom desirable. Besides it was not the single state of Attica that had a population too large for her productive powers: others were afflicted with the same calamity. The only resource was to fly to distant countries where the pain of leaving their native land would be mitigated by the prospect of greater plenty.' pp. 148, 149.

'The conquests of Alexandrus are an important event in the history of the world. The flattery of some contemporary writers, and the want of discrimination in subsequent compilers, have undoubtedly magnified the exploits of the Macedonian hero: but enough remains supported by reasonable evidence, to entitle him to a place among those who have benefited the world. To overthrow the tottering throne of Cyrus, only required a union of the Greeks under a bold commander: the Persian monarchy would have yielded to the assaults of a general inferior to Alexandrus. But the pupil of Aristoteles was educated in a different school

from the conquerors of Asia : the improvement of commerce and navigation, the union of Greeks and Asiatics by marriage, and the extension of useful knowledge, were attempted and in some degree accomplished, by this truly great man.' p. 172.

This passage from the section 'On the extension, of the Greek language and nations under Alexandrus and his successors,' is the just medium between the silly meanness of those writers of ancient times who have worshipped him as a demigod for his conquests, and the mistaken and ungenerous violence of those among the moderns, who, notwithstanding his great and useful qualities, have made him nothing better than a madman.

In those parts of the work devoted to the geography of the Greeks and Romans we miss the comprehensive views of the policy, commerce and religion of those nations, which are so remarkable and valuable a characteristic of the geography of Africa. So much indeed is already given us, that we confess it is almost unreasonable to ask for more. But the mode in which the African Part is executed naturally forms for us a high standard by which to judge of the remainder. In speaking of the town of Olympia, for example, something might have been expected upon the influence of the games, in forming and elevating the individual and national character of the Greek race ; the training of the body and the excitement of the mind, which formed Pindarus and Thucydides no less than the wrestlers and throwers of the discus. Delphi and Ægium might have led to a glance upon the policy of the earlier and later times, as the former and Eleusis would to what was most peculiar and remarkable in the national religion. But these may have been considered too extensive subjects to enter far upon.

That which is most valuable in the work is the model it affords of the method of illustrating an ancient author in the most full and satisfactory manner. With some modifications this method is applicable to any branch of public or private instruction ; and if we mistake not, is of higher example than has usually been followed in most of the seminaries in this country.

To give an instance of the application of this method, we will select the chapter on Egypt, and suppose the object to be, as of this portion it undoubtedly was, to give a class the most useful and important illustrations of the second book of Herodotus, which is occupied with the history and antiquities of Egypt, and forms the groundwork of the chapter we have chosen. This begins with the physical geography of Lower, Middle, and Upper Egypt, the peculiarities of climate, and the positions of

the important places, and proceeds to give a rapid but very interesting account of the lakes, canals, pyramids, obelisks, quarries and temples, caverns and catacombs. This sketch is taken not only from Herodotus, but from Strabon, Diodorus, Arrian and other ancient authors, and from the travels of Volney, from Calliaud, and other French and English books which treat of the subject, with ample references to chapter and page. This naturally leads to a correction of the statements of Herodotus wherever an improved philosophy or more extensive knowledge has given the means. 'Herodotus could not account, for the periodical rise of this river, nor could he hear of any explanation which seemed to him satisfactory.' The statement of his difficulty would offer a most natural occasion for giving an account of the winds, and of the dry and rainy seasons of tropical climates, and thus lead the learner from a particular case to a general and important principle.

The necessarily short account of the ruins of Thebes is such as could not fail to excite the greatest curiosity. The same indeed may be said of all the notices of the remains of art, the tombs, the mummy boxes, the rolls of papyrus, the sculptures, the paintings, which give us a glimpse of the life, 'the religious offerings the domestic utensils and articles of luxury' of this ancient people.

The second division of the chapter is 'On the ancient Inhabitants of Egypt and their Political Constitutions,' &c.

Prof. Long begins it with an account of his ancient authorities, Herodotus, Manethon, Julius Africanus, Eusebius, Geo. Syncillus, Eratosthenes, &c. and refers to parts of the Jewish Scriptures.

'These are the extant documents which the antiquarian possesses for the elucidation of ancient Ægyptian history, and the formation of a regular chronology: the contradictions and the omissions in our written records, it is supposed, will be explained and supplied, by the monumental evidence of the walls and obelisks, and the decyphering of the papyrus rolls. There are extant other writers, particularly Christian fathers, who treat of many points of Egyptian antiquities; but their remarks can scarcely apply to the period which we are considering.

'The first great event in Ægyptian history, is the expulsion of the Phœnician shepherds, or the Nomades of Lower Ægypt, B. C. 1822, if we follow the newest system of chronology. According to Manethon, eighteen kings reigned between 1822, B. C. and the era of Sesostris, a period of four centuries. The monumental evidence is said to prove, that these eighteen kings had the

same relationship and succession to one another, that the historian mentions. It is certainly a great step that has been made, and a most interesting discovery to show that eight of Manethon's eighteen names, in different parts of the list, are read on the monuments exactly as they are in the historical record. The proof of these being successive monarchs, and of the inscriptions being contemporary with the reigns, will be a valuable addition to our present knowledge.' pp. 55, 56.

'It is probable that the people, who built the monuments of Upper Ægypt, advanced northward, along the Nile. Similar buildings, obelisks and inscriptions are found, even as far south as the modern Abyssinia. It is probable also that these temples mark the progress of colonization by the same people. The ruling caste was that of the priests, and a new settlement would not be complete without a temple and its sacred ministers. When Herodotus visited Egypt, the influence of foreign dominion had some effect, though not sufficient to destroy the ancient polity of the country : it was then divided into many Nomoi, or ecclesiastical divisions, and the religious ideas and practices which prevailed in each, were generally different.' p. 56.

Then follows an account of the ecclesiastical polity, the division into castes, and the deities, oracles, and peculiarities of opinion and worship.

We have then a brief sketch of the history from Psammetichus B. C. 705, to the time of Alexander, with a few remarks on the commerce of Egypt before the same period.

The situation and soil of Egypt must have rendered it an agricultural and commercial country from the earliest times.

'In Upper Ægypt, the town of Thebes was once the centre of commerce for Africa and Arabia ; under its colossal porticos and market houses, the wares of southern Africa, and the products of Arabia and India were collected. Its fame had spread, we know not how, as far as the country of the Homeric poems. A modern traveller, (Denon,) standing amidst the ruins of Thebes could feel and comprehend the advantages of its position : he could compute the number of days' journeys which separated him from the towns of Arabia, the emporium of Meroe, and the cities of central Africa. The union of sovereign power, religious sanctity and extensive commerce, seemed sufficient to account for the mighty structures on each side of the river.' p. 65.

Religious or commercial pilgrims frequented the country ; the precious metals from the mountains east of Thebes must have been an attraction to strangers, interpreters were necessary ; a class or caste of them was formed and probably connected with or made up of the inferior priesthood.

‘Memphis in Lower Ægypt, was the centre of commerce when Herodotus visited Ægypt. The gold, the ivory, and the slaves of Africa, the salt of the desert, wine imported from Greece and Phœnicia twice a year, with the products of India and of Yemen, were collected in this market.’

‘In exchange, the merchants received the precious metals, grain, and linen cloth, which Herodotus compares with that of Colchis.’ p. 66.

‘The remainder of the chapter is ‘On the Language, Literature, Science and Stock of the Egyptians.’ It would be necessary to quote the whole to give the substance of the pithy and pregnant observations, many of them apparently only notes for fuller extempore elucidation,—upon the name, the ancient and modern Copt, probably of the same stock, and the language. The following sentences contain the best short account that we have met with, of the first steps in the recent discoveries or conjectures of Champolleon. We wish we could feel the confidence as we believe we sympathize in the great interest expressed by Prof. Long.

‘But the discoveries of recent philologists have removed all difficulty, and we now learn that the language of the Coptic Testament and other books, is the language of the hieroglyphic inscriptions, and the old papyrus manuscripts found in the mummy boxes. This assertion, of course, must be understood with some limitations; Greek, Roman, and Arabic words have been mingled with the Coptic: but the structure of the language sufficiently distinguishes it from those which have been mentioned.

‘When the triple inscription of the Rosetta stone was taken to Europe, a key to the mysterious writing of Ægypt was readily obtained. This monument contains an inscription in Greek, in hieroglyphic, and in enchorial or common characters.

‘The names Ptolemæus and Cleopatra occur in the Greek; in the hieroglyphic inscription, the corresponding names are expressed by hieroglyphic characters, and included in a ring, which is now ascertained to have been the usual practice, with respect to Greek kings, Roman emperors, and native princes.

‘A comparison of the Greek names Ptolemæus and Cleopatra, with the characters included in the rings, proved that these characters must have a phonetic value, like the characters of an alphabet. A Greek inscription found on the base of an obelisk, at Philæ, the southern extremity of Egypt, assisted in making the comparison and in deducing the phonetic values of the characters called hieroglyphic. The names of the Greek kings and Roman Emperors were discovered and compared, and thus the phonetic value of a great number of symbols was ascertained.

‘ This curious discovery has been applied to the elucidation of various monumental inscriptions with considerable success, and we may reasonably hope that a further prosecution of this research, conducted with sound and unprejudiced judgment, will give us some valuable information on ancient Ægypt.

‘ It ought to be remarked, that the phonetic hieroglyphics do not accurately represent all the letters that compose such words as Ptolemæus, Cleopatra, Berenice, &c. nor could we expect this. They come however near enough, in most instances of words that have been explained, to leave no doubt about what was intended.

‘ The Ægyptian hieroglyphics, according to this new discovery, may have a three fold value: they may represent some natural object, in which case they are nothing more than pictures, or they may be symbolical, expressive of certain qualities or compound ideas, or they may represent sounds and actually be alphabetical characters. These phonetic signs are pictures of physical or material objects, and each is said to represent the initial sound, or perhaps the first syllable of the Ægyptian word that expresses the object. Thus to represent the word Cæsar hieroglyphically in our language, a picture of a cow, a sow, and a rat would give the skeleton and the frame work of the name.’ pp. 69, 70.

In the remainder of the chapter, the astronomy, geometry, sculpture, architecture and painting of the Egyptians, for the two first of which and probably for instruction in other sciences, Plato, and Eudoxus, Thales and Pythagoras are said to have spent some years in the country, are rapidly touched upon.— But we have room for only the concluding observations.

‘ Some of the temples in Nubia are said also to possess sculptures approaching near to the perfection of Grecian skill.

‘ The same general remarks will apply to the Ægyptian painting. The reliefs on the walls of the temples were painted, and the colours were yellow, red, blue and green, with white and black. These colours are not mingled, but are kept entirely distinct, and even seem to have been appropriated to particular subjects or deities. Ammon, for instance, is said to be always painted blue. The walls of the sepulchres were also painted, and it is from these imperishable colours that we must derive our principal knowledge of the ancient Ægyptians. Pictures of domestic life and utensils of various kinds are here represented. The outline of these drawings is tolerably good, but their general character is like that of the sculptures—the thing signified is known, but the beauty of complete imitation of natural or artificial objects is not attained, nor is the ideal perfection of the Greek artist to be looked for in any remnant of Ægyptian labour that has hitherto been found.’ p. 72.

We have thus, in the space of twentyfive pages, which, with the extemporaneous explanations that would naturally present themselves, might occupy perhaps two hours of a lecturer's time, an ample introduction to the Second book of Herodotus. This could by no possibility fail to excite great interest and curiosity. It would raise the mind of the learner from the dead letter of the Greek text, to many of the most important subjects of science, art, and literature; it would connect the oldest of the profane historians, and the earliest of known kingdoms with much that is most curious in modern discovery and most elevated and beautiful in modern science. It would open the eyes of the young scholar to what was before him; so that instead of seeing nothing in the pages of this father of History but barren and unintelligible Greek, he would find them teeming with the germs of useful philosophy, and the elegant arts. Lessons in Greek, with such or similar illustrations, would be any thing but irksome to every young man of spirit and intellect sufficient to deserve the culture of a learned and accomplished education.

It is true, as it may be objected, every author does not admit of the same fulness of illustration as Herodotus does when treating of the antiquities of Egypt. But every ancient author does admit and demand something very much like it; and it is the very office of a good instructor to search out and lay in order this extraneous information which the learner knows not where to look for and has no leisure to find. The business of the pupil is with the text; but the teacher has performed less than half his duty if he has rested satisfied with ascertaining that the pupil has been faithful in gaining what can be gained from his grammar and dictionary.

Neither is it necessary nor perhaps advisable that such illustrative information should be given in the shape of a written preliminary dissertation. It may better spring from the occasion, or form the beginning or middle or the end of each lesson.

We may venture to say that the general practice of this mode of teaching would do more to obviate the objections which are often made by unlearned but sensible practical men against the study of the ancient languages than any other course of measures that could be pursued.

We had intended to follow our author in what he says of *Æthiopia*, and *Meroe* in particular; to trace with him the great paths of ancient commerce, from *Arabia*, across the straits of *Babelmandeb*, by *Azab*, *Axum*, and *Meroe*, down the *Nile* to *Thebes*, and thence across the deserts, by the *Oases* to *Car-*

thage on the coast of Africa, and by the Nile and the Great Sea, to Tyrus on the borders of Syria. These views form, as we have already said, the most interesting and valuable portion of the geography of Africa. But time and space fail.

We will not however conclude without giving our mite of approbation to the practice of the author in regard to proper names. He is disposed to write them in near conformity to the language to which they belong.* It is hardly necessary to say how much doubt and confusion would be avoided if the practice could become universal among the scholars of all nations. Let any one look a moment on the strange metamorphoses that appear on French, Italian, Spanish and English maps, or call to mind the many monsters that are made of a single tyrant of Syracuse, and answer us, is it not an evil? It is vain perhaps to hope to reform the French and Italians, but it is something to reform ourselves.

We confess that after reading this book and tracing out his quotations from the few Greek authors which we have by us, dipping again, after an estrangement of many weary years, into the pleasant stories of old Herodotus, and reviving the half obliterated words of our former stock, by the aid of an old Hedericus, itself grown out of fashion,—thus rolling ourselves back in imagination, to the pleasant years when we were, like the young men whom Prof. Long addressed, entering upon the paths of literature, which we have so often since been obliged to quit, and imagining ourselves listening to his learned and familiar conversation lecture, we returned—we are sorry to own how unwillingly—to other labours and pursuits. And if we with feelings hardened by toils and ardour cooled by disappointments (our brother reviewers will agree with us that they are neither few nor small,) have been thus excited by the hasty perusal of a book accidentally sent us by a friend, what effects must be likely to be produced by the lectures themselves in ardent young men, with leisure and books and life before them, by the voice and eye of an eloquent and zealous professor? How could they fail, many of them at least, to catch a spark of the flame of generous scholarship which burns within him?

* Marks of haste are observable in the want of uniformity in the orthography of several names, which may, however, be easily obviated in a future edition. And it would give additional value to the somewhat imperfect index to indicate the pronunciation of proper names.

ART. VII.—*Journal D'Education et D'Instruction.*

A Periodical with the above title was commenced in Paris, in April 1828, and has been issued regularly ever since in monthly numbers of fortyeight small octavo pages each. Of the ability with which it is conducted, a list of the names of those engaged in it, is sufficient testimony ; among whom the reader will recognize some of the most distinguished men of the present age. They are as follows ;

Messrs. Artaud, professor ; Basset, late censor of the university ; Bebian ; Beyerley ; Coquebert de Montbret, member of the Institute ; C. Dupin, of the Institute ; Francœur, professor to the faculty of sciences ; Lacroix, of the Institute ; Count De Lasteyrie, member of many learned societies ; J. P. Pages ; Stapfer, late minister of public instruction in Switzerland ; Villemain, of the French Academy. The responsible editor and publisher is the Count de Lasteyrie.

We have received the first thirteen numbers of this work, with translations from which we shall frequently enrich our pages and instruct our readers. We regret that the short time these numbers have been in our hands, has prevented us from presenting to our readers, which we shall do at some future day, a general view of the present state of learning in that country, the interest and attention which the subject has lately awakened, and the operations which have been undertaken, and are now prosecuted, for its improvement. The rank and talents of the men who have enlisted in the cause, give earnest of the most favourable results ; as is manifest, not only from the above list of conductors and the details of this work, but also from the following paragraph, which has lately gone the rounds of our public prints. 'Of seventeen Paris journals the proprietors of at least one third are noblemen, or persons of great distinction in the literary and scientific world.' This is eminently true of those engaged in the cause of education.

The following is a translation of a review in the above work. From the extracts herein given, we cannot but think the work, which is the subject of it, well worth perusing.

REVIEW.

Progressive Education ; or, Study of the Course of Life. By Madame Necker de Saussure. Paris, Sautetlet & Co., Place de la Bourse, 1 vol. 8vo.

PART. I.—*Study of the Earliest Infancy.*

If education is the apprenticeship of life, if it ought to form

the child to manhood, one is not qualified to speak of it, whether to appreciate what it is, or to determine what it ought to be, before having a settled opinion upon the end and employment of life, before knowing the order in which the faculties are developed which together constitute human nature, and the germ of which is ingrafted in us from our infancy. This is what Madame Necker de Saussure appears to have well understood, and our first proposition may be regarded as an epitome of the whole plan of her work.

This volume is divided into three books, the first contains an exposition of the principles which apply to all the periods of education. The most natural course, the only one necessary, is, first to point out the end at which to arrive, and then to trace the most sure route for arriving at this end. The author begins therefore with an exposition of her ideas upon the destination of man. Her ruling thought, that which serves her as guide, is, that our existence here below is only the prelude of another existence, that our passage through the present is only an education for another world. Viewed in this light, education is a work of moral improvement ; its task is to develop all our faculties in the view to the amelioration of our being. The want, the presentiment of something better, is, here below, the instinct of man. The search of the useful, which is the principle of our material well-being, as well as the sentiment of duty, which is the principle of our morality, unite to direct our double nature to a better state. It is a salutary impulse, of which education ought to avail itself in its origin ; it ought to treat it with care ; and the instructor will so have the better provided for the happiness of his pupil, as he shall have brought into activity with him the noble instinct of improvement.

‘Education,’ says the author, ‘ought therefore to answer to our double destination. It ought to prepare the child for two successive existences. There is in him an immortal spirit which has only to pass through this world ; there is a feeble creature which came into it to suffer and die.

‘Our nature has relation to these two vocations. The soul has faculties which relate to its sojourn upon earth ; it has those also which carry their views and their hopes beyond it. Both ought to be developed by education. Since God has not chosen to call us immediately to himself, and since he has obliged us to seek him by the road through life, to provide the child with all that is necessary to the journey, is the strict duty of the instructor.

‘ But, that life is a journey, that the idea of marching ought to be attached to all the periods of our existence, is what must never be lost sight of, and has not been sufficiently set forth, it appears to me, in the various definitions which have been given of education. People would say that the object was to lead the youth to a certain state, rather than to impress upon him the motion which shall one day carry him infinitely beyond that state ; and nevertheless, as the great moral and intellectual development at the end of childhood, is nothing when compared with what ought to be looked for in mature age, the thing by far the most essential, is to give the impulse. The progress already made is of less importance than the disposition for ulterior progress ; so that it is less necessary to take notice of the degree of the child’s advancement in his career, than of the resolution with which he appears inspired to run it. The more nearly a pupil approaches the general level of society, in religion and knowledge, the more easily can he persuade himself that he has no longer any thing to acquire in these two respects ; so that there is a reason of stagnation, and by consequence of mediocrity, in advancement itself, if it is not the cause of new efforts.

‘ This is why so many educations, in appearance the object of great care, are attended only with insignificant results. This is why so many minds, so many souls, degrade themselves. When there is no interior movement of life, every thing withers and soon perishes. Not to grow is to decrease ; not to advance is to go back : such is human nature. If there is in us a principle of amendment, there is also a principle of decline. Strength is necessary in order not to descend ; and perhaps one never gathers enough, but when he aspires to mount.

‘ According to Kant, the end of education should be this :— *to develope in the individual all the perfection of which he is susceptible.* But as such a work cannot be achieved in infancy, and as it requires for its accomplishment the entire existence, I venture to propose a slight change in this fine definition ; *to give to the pupil the will and the means of arriving at the perfection of which he shall one day be susceptible.*’

The preceding is sufficient to give a conception of the general principles, the great ruling ideas, which form in some sort the theoretical part of the work ;—what the author might call her philosophy of education. In the following books we ar-

rive at the practical applications. After having pointed out the end, it remains to find the means of conducting us thither ; and, for this, an indispensable condition is to recognize the laws of the moral developement of our species, the order according to which the intellectual faculties display themselves. It is necessary to follow their march and their progress, from the child's birth. Most writers, who have treated of education, have dwelt too little on the first years of life. The infant is a chipped block, but skilfully prepared for the future. He has in germ all that which should make the man. He supplies by instinct the means which are still wanting to him. But already these first impressions, these first habits, leave upon the character and the understanding a stamp which cannot be effaced. Thus Madame Necker stops with particular care to study the tender age. She has devoted the second and third books of her work to observe the first epoch of human existence ; that is to say, infancy during its four first years. In her preface she gives the following exposition of the importance of this period, so short, but so rich in interesting facts for the observer.

‘There exists between this period and the following a line of demarkation, which is not traced arbitrarily, but which depends upon the immutable and necessary order of the development of the individual. The child of five years is in possession of all the intellectual faculties granted to humanity. Some of these faculties, feeble and little exercised, often put in play by the most frivolous motives, express themselves as yet only by insignificant acts ; but are nevertheless seen to manifest themselves in him, and he makes use of them in his way. Before four years, on the contray, the child is a being by himself. He lacks one of the essential elements of human reason, reflection. His mind, already very active, does not turn its view upon itself, and has no perception of its own operations. Besides, the instincts of the first age are with him in their vigour. His constitution, both moral and physical, is still composed to a great degree of the gifts granted to the earliest age for a temporary and special end ; gifts which are no longer found in the sequel. Thus dispositions which partake of the mysterious nature of instinct, such as sympathy and the propensity to imitation, soon cease to make themselves remarked, whether they have really much diminished, or whether the new development of the faculties which are better

known to us alone attracts our attention. In fine, when even the child already makes use of language, he still employs it only as a means of communicating outwardly ; his thought does not unroll itself interiorly into words, if one may be allowed such an expression ; and he lives always that life of sensations, images, desires, and various impressions, which is that of the new-born infant and of animals. From this mode of existence so different from ours, it results that the first age is the only one which is thoroughly separated from the following ages ; whilst these are connected by insensible gradations.

‘ Nevertheless, it is not suddenly that the dispositions of the first age are seen to disappear. The period from five to ten years is an interval of transition, during which the instincts of the child grow gradually weaker, as the faculties of the man increase. But these instincts still subsist in the bosom of the individual, when they have become difficult to be recognized. If then one has neglected to study them when they reign alone, one will not distinguish them in a more complicated existence. One of the elements of the moral constitution of the pupil will always escape us, if we have not observed the child in the tender age.’

Madame Necker follows, therefore, the history of the child, of its impressions, and of its ideas. After having observed its natural instincts and the first wants which put them in play, she studies the action of the exterior world upon this soul still in ignorance of all things, and she applies herself to surprise the awaking of the various faculties. She sees spring up successively, memory, imagination, sympathy, the propensity to imitation. Here, I think, I ought to citè some of the remarks of the author, to prove at once the justness and acuteness of her perceptions, and her sagacity in unravelling the processes of incipient intelligence. The following are a few passages from a piece, full of grace, upon the serenity of the first age.

‘ An infant, at six months, half reclined in his cradle, and playing with its little hands, is in a situation the most happy. It is the same at nine or ten months, when seated upon a carpet, it amuses itself with dispersing various objects, which it next seeks to collect. While it is playing thus, you may resume your occupations ; a look, certain signs of intelligence from time to time, are sufficient to tell him that he is protected, and his security is perfect. Never deceive such a sentiment. Go to him, if he gets into difficulty, or even if, his interior movement beginning to subside, he can no longer spread it upon what surrounds him.

Then, nevertheless, be not in haste, and endeavour to give a short exercise to his patience. Try to make him attach a sense to this simple word: *Wait*. If this word has always expressed a sacred promise, it will take by degrees a great signification. The child will comprehend that you are decided to succor him, but that you have a vocation yourself; that he ought to receive and not to exact; and he will be the more tender and the more grateful for it.'

A skilful German physician, Mr. Freidlander, was struck, on arriving in France, to see to what degree people there sought to excite the vivacity of little children.

'It has appeared to me,' says he, 'that mothers played too much with their children in the first period of life, and that they excited too much their vivacity. In Germany mothers are often heard to recommend to their infants to keep themselves quiet.'

What reflections does not this observation so simple suggest? Who can determine the influence of this difference of conduct? Who shall tell us if the so marked preponderance of the active faculties with one of the two people, and of the contemplative faculties with the other, may not be assigned to this same cause, which reproduces itself under various forms during the whole course of education?

From sympathy Madame Necker makes to spring the propensity to imitation. I am not too clear if, rigorously speaking, this lineage is very exact. I should be rather disposed to think that the instinct which excites the child to imitate what he sees done, is primitive like the others. Whatever it may be, the observations in detail are not the less just.

'After having felt with us,' says the author, 'the child wishes to act like us: this is very simple. He believes himself able to execute what he sees us do, and his attempts, at once graceful and awkward, are for us the source of great amusement. We make him an object of pleasantry, whilst such undertakings were with him the effect of a serious desire, which we soon come to prevent. Natural essays of imitation become premeditated, affected almost, when they are continued to divert us.

'A woman receives a letter, and reads aloud some passage of it to those who are around her, without thinking that she is heard by her child. Soon the latter avails himself of the first paper he can find, raises it before his face, and at random utters all the words which he recollects, connecting them by a sound similar to that of speech. If the witnesses of this scene set themselves to laughing, the child does not interrupt his reading.

A glance thrown clandestinely upon his mother reveals in him a comic mixture of gravity which he wishes to preserve as an actor, and of the gaiety which he participates. Soon, animated by success, he carries his part still higher and higher, and at the end there is nothing in him but a little buffoon who seeks to amuse. Nevertheless, he did not begin by pleasantry, but thought in good faith that he was setting himself about a serious occupation.'

One of the most remarkable chapters of the second book, has for its title, *How children learn to speak*. The author submits to a learned analysis this new privilege of our species, and the curious apprenticeship which the child makes in it; and she throws light upon the march of his intellectual development, by the order in which he makes use of the different parts of speech. There are three sorts of words which the child pronounces before others. These are, nouns, verbs, and adjectives; which form the matter, and as it were the body of discourse. They express his chief interests in the midst of this world to which he is still a stranger, viz: to distinguish exterior objects by names, to define his own impressions by adjectives, and, in fine, to express his determinations by verbs.

'Two words which the child learns very readily, the particles *yes* and *no*, are translations of gestures. They designate the material act of repelling and of receiving, and thereby become verbs: they are *velle* and *nolle*, to will and to will not.

'There are next some adjectives which introduce themselves into his head. They are those which express lively and frequent sensations. *Pretty* is soon of this number, so great with him is the need of testifying his admiration.

'Those vestiges of animal language which have been preserved in our idioms, those cries which have been received into human language under the name of *interjections*, the child siezes upon and applies to a wonder. Never is the *Oh!* of disagreeable astonishment confounded with the *Ah!* of pleasure, nor the sentimental *O* of prayer. How much time must roll away before one could explain all this to him philosophically! But the young bird has learned the song of its mother.'

On the subject of general nouns and of abstract ideas, the author combats in some points the opinion of Locke and Condillac. It seems to us that these philosophers have never denied that the mind begins by a purely individual notion of objects; and perhaps they would have found no difficulty in admitting, with the author, that general terms are not, to the child, the expression of an abstract idea already conceived, but that they will be the instrument which shall enable him to conceive them.

Already two women of superior mind had written upon education, Madame de Remusat and Madame Guizot. The work of Madame Necker is destined to take an honourable rank among these labours so useful. We find in it the alliance of an exalted reason with that delicacy of perception which seems more particularly given to the female mind. It will be read and consulted with profit by all mothers, and we may add, by philosophers, who will find therein a collection of facts and experiments, new and curious, upon our nature. Besides the elegance and grace of the style, that which makes its charm is that it breathes throughout that love of the beautiful and that purity of moral sentiment, which are the emanation of an exalted soul.

[For the Journal of Education.]

ART. VIII.—*Cursory Remarks on the Influence of Novels.*

WE are aware that we have taken a subject which would hardly come within the limits of education, according to the usual acceptation of the word. By education is commonly understood, nothing beyond the direct instruction afforded to the young. But it appears to us that it is time that this word should have a broader meaning—that it should be made to embrace whatever tends to the formation of the character of an individual, whether it proceed from the direct efforts of the instructor, or from those influences which are imperceptibly changing the state and condition of society. Regarding the word in this extended sense, there is much more of education that is latent, than there is apparent—and surely it is not useless thus to regard it, since a knowledge of the secret causes, which are giving a tone and character to almost every mind, is certainly not unimportant to the application of suitable external aids to its development. The husbandman may cultivate his soil, simply from experience, and in total ignorance of those sciences, of which his vocation affords such ample illustration—but when you reveal to him the laws of nature you infuse new life into his calling, and his mind seems to form a connecting link between the secret inward power of growth, and the external means of cultivation. So it is with education. The disease of the infant must sometimes be cured by changing the quality of the milk of its mother. Let the instructor become acquainted with the power which is working within, and he will be able to work

with it, and if it bring forth good fruit to cherish it, if bad to correct and root it out.

Thus it is, that when particular causes become so universal in their influence, as to impart a new hue to the common mind of society, their consideration becomes important to the instructor; for his labours are not entirely of an absolute, but of a relative character. He ought to be well acquainted with all that goes to constitute the moral and intellectual condition of the people; for this condition is exerting a secret influence on the object of his care, of which it should be his aim to derive all the advantage and to avoid all the evil. The education of the heart is certainly not less important and more difficult than that of the understanding. For the latter, the field of science is ample, and its laws are fixed immoveably and many of them are clearly demonstrated. Thus what is true may be defined and made apparent, but what is good in the affections is not so easily measured. Different people also have very different views of what is good. That the love of parents for their offspring should often be of such a quality as to become a curse rather than a blessing, is no less true than deplorable. They sometimes seem in their children to see themselves as it were projected before them, and to make the poor little sufferers both the depositaries and the victims of their own pride. Thus the love which should be the purest and the most useful, may become the most selfish and the most deadly in its effects; and that embrace which should protect and preserve, may in its violence suffocate and destroy. Parental affection is designed by Providence to have for its object not merely the health and preservation of the body but that of the mind also; and it is most deeply to be regretted, that it is so frequently unable to discriminate between the good and evil tendencies in the subjects of its care. The secret, imperceptible influence of religion, however, on all classes and ages of society, though immeasurably short of what it is designed to be, is still of immeasurable importance. The mind of the child requires the heat and light which descend from another world, not less than the objects of nature do those which warm and illumine this. Without the education of the heart, that of the understanding must be a lifeless and useless thing. Knowledge without principle seeks not to enlighten, but to enslave the world. It would hide its treasures from the common eye of man, that it may the better turn them to its own purposes. The gold becomes dim that is grasped for such a purpose, and the possessor in the attempt to de-

destroy others, is sure to destroy himself. The circle of his vision is contracted to the narrow sphere of his own interest, not his real good, but his apparent interest. It is truly of little consequence to impart treasures whether of gold or of knowledge, without first imparting the disposition to use them in the service of mankind, and while the instructor is anxiously watching the progress of the object of his care, his mind should be turned inward with still more anxiety to that central power, where the slightest false movement, which may be then almost imperceptible, is sure some day to become visible in the disarrangement of all the other parts. While his understanding is applied to the understanding, his heart also should rest on the heart of the child ; warming the atmosphere about it, that its young affections may come into existence in health and safety. But it is time for us to proceed to the few remarks, we have to make more directly on the subject.

It cannot have escaped the notice of our readers, that a vast proportion of the reading of the present day is that of novels, and that they are silently exerting an influence on the character of the age, almost unparalleled in the history of the world. Of these there are some, though we are happy to believe they are becoming less common, where immorality is not only not discountenanced, but is set off in such relief with the more attractive qualities of human nature, as to leave no doubt of their dangerous tendency with the youthful unguarded mind. It is not our object to speak of works of this character. They should be banished with the seducer from all decent society. We would shut our doors against that literature under whatever form it may appear, which would come into our dwellings, 'rouged like an harlot, and with the harlot's wanton leer.' Novels of this description are the legitimate offspring of infidelity, and, like the writings of infidels, have no claim to the attention of the lover of true religion—for he that hath been permitted to feel and to see the truth of Christianity, and the eternal foundation of justice and judgment, can no longer admit these subjects as debatable ground, and ought not to have his peace disturbed by such intruders.

The majority of our novels, however, must certainly be regarded as of a very different character from that to which we have alluded ; and though we might hesitate to pronounce them as absolutely good in themselves, there is no reason to doubt their being remedial in the existing state of society. They have been regarded by religion as an open enemy, or at best a

doubtful friend ; but they appear to us to be intimately connected with the existing state of religion and science in the world, and by no means an unfair representative of them. Religion regards its subjects as immortal ; by denying immortality to the strongest feelings by which we are influenced, she gives to the novelist, that which she will at some future period remand as her own property, and which when rightly used in her service will work miracles indeed in changing the moral condition of the world. Religion has left us no less to the imagination than the novelist ; and when the distant prospects of happiness and misery which she has held forth, shall be lost in the view of the good and bad affections which exist at present, then also may the stories of romance subside into the actual enjoyments of domestic life. The literature of the day is in fact the offspring of the religion of the day ; and that it is not acknowledged as such, argues as unfavourably of the chastity and purity of the latter, as of the former.

We have no occasion to tell to either sex, the secret of the power of novels. They call into action that strong love which may be chastened and purified, but before which even religion itself may be in danger, when, as has sometimes been the case, she rashly attempts to eradicate it. There must be a hero and heroine, and the object of the story is to make the interest in their union stronger and stronger in the mind of the reader. This is effected by presenting them in the most attractive light ; by leaving the result in obscurity ; by thickening difficulties in the way of a happy issue ; and by a variety of incidents by which the interest is increased, and the desire strengthened by being continued and directed to the same end. When the novelist has succeeded in calling into excitement this master-passion of the human breast, it is not difficult for him to put into requisition all the servants of the household. The reader is prepared to look with new pleasure on the scenery of nature ; to listen with rapture to the music which seems to fall on his ear ; to travel over seas and through forests ; to mingle with all ranks and classes of society, and to listen to the pages of history when she condescends to appear in the garments of fiction.

Thus it is that novels operate on the feelings rather than the understanding. They are performing a work at the present day on the heart, scarcely less important than that which scientific researches are effecting on the intellect ; nor do we discover more of irreligion in the looseness of the one, than in

the pride and self-complacency of the other. They are moulding the feelings of the community into a common form, and insensibly removing asperities of temper which might not yield to the direct power of truth. The particulars they contain may be soon forgotten, but they leave a swell on the memory, which does not so readily subside. The temporary exercise they afford to the feelings, if not abused, seems to us not unfavourable to their healthy development. Little girls must have their dolls, and little boys their riding sticks.

It may appear strange that an age distinguished beyond all others for its strict adherence to facts in scientific researches, should likewise be remarkable for such an exuberance of works of fiction. But it appears to us that they are the product of the same soil. The multitude of novels of the present day, could not have been produced in an age less scientific; and were it possible, it would have been followed by the most disastrous consequences. As it is, there are undoubtedly weak minds among both sexes which are removed from their proper balance, and suspended, as it were, midway between earth and heaven, at once deprived of the sober realities of this world, and of the pleasure they might derive from the creations of the imagination, did they not mistake the picture for the object that is painted. But there is fortunately for the most part a string to the kite, and the buoyant flights of fancy acknowledge a centripetal power in the unyielding, unchangeable character of scientific knowledge. The only rational pleasure connected with the perusal of works of fiction is never unattended with the perception that they are such. The closer the resemblance to nature the better. We may sometimes almost lose ourselves as when gazing on a beautiful picture; but those who cannot distinguish painted fruit from real, by the sight, the touch or the taste, may learn their mistake to their sorrow when they have swallowed it. Those who so far mistake the character of novels, as to use them as something real and substantial in themselves, will shortly find them as unsatisfactory as those realities from which they are endeavouring to fly. It is necessary not only that we feel that they are natural, but that they are only a resemblance of nature, and not only that they resemble nature but to witness the art by which this resemblance is produced. Have but a real mirror, and the magic of a mirror dance is ended.

For ourselves, we regard the use of novels as purely medicinal. When fatigued or perplexed with business or study, or

wearied by passions which yield only by little and little to the power of higher principles, we are sometimes disposed to fly from ourselves, they help us to do it. The names and the contents are at once forgotten ; but if they are what they should be, they refresh and invigorate the mind like sleep. It is necessary for us to use them sparingly, and not to forget the purpose for which they are used. There is such a thing as being a drunkard in mind as well as in body, and he that makes that in spirit his meat and drink, which is good and safe only as an occasional stimulus, is in the way to destroy his power of discriminating between good and evil, truth and falsehood, and to bring disease and death into his soul.

It is by no means the design of these remarks to speak in terms of unqualified approbation of any of our novels. As they are made to please the taste of the day, they yield readily to its corruptions. There is much that is depraved and affected in the existing state of society, and those who write to please people as they are, must not hold a glass before them, which will make them blush at their own deformities. But we trust that the fountain-head of literature may yet be opened. Protestantism has been gaining ground, but religion has continued a recluse. She has long enough stood aloof both from science and literature. It remains for her to enter into them not with a sad countenance, but with childlike innocence chastening and purifying ; and to receive from them a tithe in return. Then shall we delight to behold all things, in their proper places and true relations ; both the trees which are laden with fruit, and the flowers which cheer us with their beauty and fragrance, and send us rich presents by the little bee that visits their secret chambers.

INTELLIGENCE.

Model Infant School.

At a meeting of citizens, held on Wednesday afternoon, September 23, 1829, at the school room, No. 229 Arch street: Robert Ralston, Esq. was called to the chair; and Joseph R. Chandler, appointed secretary.

The Rev. Mr Carll, stated the object of the meeting to be the formation of a society for the purpose of establishing, in this city, a 'Model Infant School,' to prepare teachers for the many schools of that kind already in existence, and which, when suitable instructors shall be supplied, will undoubtedly rise up in every town and district in the Union. After a statement of the very great benefits which had attended the labours of individuals and the public in the good cause, in various places;—and, after several resolutions, expressive of the hearty concurrence of the meeting in the plan proposed; it was

Resolved, that a committee be appointed to draft a circular, recommending the establishment of these schools in every town and district throughout our State and country; and also, an invitation to cooperate in the establishment of a Model School; which committee, when appointed, shall receive any communication relative to the interest of the society.

The committee consists of Rev. M. Carll; J. R. Chandler, and Rev. R. W. Cushman.

J. R. CHANDLER, Secretary.

ROBERT RALSTON, Chairman.

CIRCULAR.

To the Friends of Infant Schools throughout the United States:—

Friends and Fellow Citizens, Two years have now elapsed since those excellent institutions, called Infant Schools, were introduced into these United States. Of their vast importance, in a civil, moral, and religious point of view; of the practicability of interesting the infant mind, by addressing the faculty of sensation; giving the thinking principle a proper direction, and thus laying the basis of future intellectual energy, there no longer remains a doubt. Actual experiment has established the fact.

In a document of this nature, we cannot pretend to enlarge upon their incalculable benefits: suffice it to say, that whether viewed in relation to the welfare of the rising generation; as a matter of economy and actual saving to the State; to the perpetuity of our political existence; or the present and future happiness of our fellow men; they present to the consideration of the patriot and philanthropist claims of no ordinary character.

Did we stand in need of arguments to convince us of their utility, what better can be offered than the favourable manner in which they have been received by the public? Already we find them introduced into all our principal cities and towns in the Atlantic States. In Philadelphia alone, there are nine, containing, in the aggregate, from fif-

teen to eighteen hundred children, rescued from the contagion of wickedness, and their footsteps directed into the paths of virtue.* Not only are these little innocents snatched from the scenes of disorder which the streets and alleys of a populous city exhibit, but the manner in which they are prepared, after passing through this early course of instruction, to enter our free schools, sabbath schools, and other institutions of learning, furnishes another consideration, which will not be overlooked by the philanthropist.

These schools are probably destined to exert a powerful influence on the entire system of education: they will urge forward those who are now in advance; new modes of instruction will be introduced; new illustrations of science, and a superior discipline will obtain, grounded in the law of mutual kindness.

Even now, a plan of instruction is called for, founded upon the constitution of the mind, a better knowledge of the faculties composing it, the order in which these faculties exist, and the discipline best adapted for their exercise and gradual development. Regarding the senses as the inlets to the mind, we must commence with *sensation, observation, and reflection*, thus forming the *basis* of thought; and introducing those elements, out of which, by means of reflection, comparison, discrimination, and association, the higher faculties of memory, judgment, reason, intellect, and, in short, the moral and religious sentiments are formed, by which the passions and propensities of our animal nature are to be controlled.

Such being the important consequences resulting from these institutions, it is obvious that they call for a well digested system, and facilities of acquiring a knowledge of the mode of instruction, of which they are at present destitute.

The friends of Infant Schools are, therefore, most earnestly solicited to cooperate with the society now formed, for the purpose of establishing a Model School, with a view of perfecting the system, and of affording opportunities for training up persons to take upon themselves a charge so interesting.

In addition to the benefits above alluded to, immediate steps will be taken to introduce all existing improvements and facilities of imparting instruction which have the sanction of experience, both in Europe and in our country. No idea or impression, of a physical nature, will be considered as permanently fixed in the mind, until it has been submitted to the observation and scrutiny of the *senses*; we shall therefore draw largely from the stores of nature, and much pains will be taken to provide a suitable apparatus. A correspondence has already been opened with the Infant School Society of London; the fruits of their experience will be received and promptly transmitted to the establishments throughout our own country.

It is hoped that a *united effort* will now be made by the Christian philanthropist to lay a foundation, that shall be an honour to the age in which we live, and an imperishable monument of glory to our country.

It is intended, that any community or individual subscribing a moderate sum towards the support of this Model School, shall be entitled to send one or more persons to acquire a knowledge of the system.

* An equal number waiting to be received.

So soon as the funds will permit, this school will go into operation. In the mean time, any communications (post paid) addressed to either of the subscribers, composing the committee on behalf of the society, will receive due attention.

October 1st, 1829.

M. M. CARLL,
JOS. R. CHANDLER.
ROBT. W. CUSHMAN.

University of London.

NOTICE OF THE COURSES OF LECTURES

During the Session 1829—1830.

THE division of the Classes and the method of instruction originally adopted have been carried into effect without any important alteration, and they have been found to answer so well that no change is contemplated. The hours at which some of the Classes meet have been altered; and in those for the modern languages, the Students are to be divided into Senior and Junior Classes.

The Session of the University commences on the 1st of October, and terminates on the 15th of July.

The following Classes will open on Monday the 1st of November, and will continue till the middle of July, with no other interruption than a recess of about ten days at Christmas and at Easter.

The Latin and Greek Languages, Literature, and Antiquities.

The English, French, German, Italian, and Spanish Languages and Literature.

The Hebrew, Persian, Arabic, Sanskrit, and Hindoostanee Languages and Literature.

Mathematics, Natural Philosophy, and Zoology.

Jurisprudence and English Law. These Classes, however, will be suspended during the Spring Circuit and Quarter Sessions.

The Class of Political Economy commences on the 1st of February, and continues to the end of the Session.

The following MEDICAL CLASSES will open on Thursday the 1st of October, with the exceptions afterwards stated, and will continue to the middle of May, without any interruption except for a few days at Christmas and Easter.

Anatomy, Physiology, Comparative Anatomy, Surgery, Clinical Surgery, Nature and Treatment of Diseases Clinical Medicine, Midwifery and Diseases of Women and Children, Materia Medica and Therapeutics, Chemistry, Medical Jurisprudence, and Dissections and Demonstrations.

The Class of Botany will open on the 1st of April and continue for three months.

The plan of the University includes the following branches, for which Professors have not yet been appointed: Logic, and the Philosophy of the Human Mind; Moral and Political Philosophy; History, Ancient and Modern; Roman Law; Mineralogy and Geology.

Students are to enter their names previously to the commencement of the Classes, and all fees are to be paid at the office of the University. Students nominated by a Proprietor must bring a written nomination, but no particular form is necessary. Those who during the last Session were nominees or Proprietors are not required to renew their nomination.

Students are at liberty to select the Classes that they wish to attend; but the Courses recommended to those who are beginning their academical general education, are, Latin, Greek, Mathematics, and English. The hours are so arranged that the Classes for the English, French, or German lan-

guages may be attended at the same time with the Classes for Latin, Greek, and Mathematics.

It is recommended that no person should enter who is under fifteen years of age; if any one should present himself under that age, he must be examined by the Professor, and declared to be fit for the Class which he proposes to enter, before he can be admitted.

An opinion having prevailed that instruction at the University is conveyed by *Lectures* only, it is proper to state, that in all the Classes there is a direct communication between the Professor and his pupil by examinations and exercises; and where languages are taught, the instruction is conveyed principally in the way of interrogation and written exercises, and only incidentally by continuous Lectures. The Junior Classes of the modern languages are adapted to mere beginners.

Hours are fixed for two Junior and two Senior Classes of some of the Foreign languages; but it is to be understood that the Professor will not open two Classes for the same kind of instruction unless there shall be a reasonable number of Students for each.

Where Junior and Senior Classes are opened in the same department of instruction, if Students who have entered for the Senior Class are found upon examination not to be sufficiently advanced for it, they will be required to join the Junior Class.

LATIN.—Professor Key.—Daily except Saturday.

Junior Class.—From 10½ to 12½. } Fee for each Class, £7 10s.
Senior Class.—From 12½ to 2.

The Junior Latin Class will commence with Cicero's Oration on the Manilian Law, and the Tenth Book of the *Æneid* of Virgil, and it is desirable that those who are not able to read the latter book with tolerable facility, should not enter the Class; for without such previous acquaintance with the language, they cannot receive benefit from the instruction of the Professor.

The Senior Latin Class will commence with the latter part of the Letters of Cicero, and the Epistles and Satires of Horace. A Lecture on some subject connected with Roman History, Geography or Antiquities, will be read to this Class once every week, at an hour not interfering with the other Lectures.

GREEK.—Professor Long.—Daily except Saturday.

Junior Class.—From 12½ to 2. } Fee for each Class, £7 10s.
Senior Class.—From 10½ to 12.

The Junior Class will begin with the Fifth Book of the *Anabasis* of Xenophon, and the *Prometheus* of *Æschylus*. Instruction in the Geography of Ancient Greece, Asia Minor, and the islands, will accompany this part of the Course. Those who enter the Junior Class should be able to read the *Anabasis* of Xenophon with tolerable ease, for without such previous acquaintance with the language they can scarcely derive benefit from the instruction of the Professor; a careful perusal of the first two or three books of the *Anabasis* is recommended to them.

The Senior Class will commence with the First Book of Thucydides; and the *Persæ* of *Æschylus*; the latter will be compared with parts of the Seventh and Eighth Books of Herodotus.

In both Classes, and particularly in the Junior Class, the Professor will give preliminary instruction on the author to be read. This assistance will be given in such a manner, and to such an extent, as he may consider best adapted to the object of instructing the Class; and it will always be followed by strict examination.

The Professor intends to appropriate an extra hour in each week to delivering a Lecture or Discourse to the Senior Class, on some subject closely connected with their daily Greek studies.

ENGLISH LANGUAGE.—Professor, the Rev. Thomas Dale.

Junior Class.—Tuesday and Thursday, from 2½ to 3½ } Fee £5.
Saturday, from 10¼ to 11¼ }

The attention of the Pupils in this Class will be primarily, but not exclusively, directed to the Principles and Practice of English Composition; and the text-books to be used will be Grant's English Grammar, Crombie's Etymology and Syntax, and Irving's Elements.

Senior Class.—Tuesday and Thursday, from 3½ to 5. } Fee £5.
Saturday, from 9½ to 10¼ }

The Pupils of the Senior Class will be first instructed in the Elements of the Anglo-Saxon, as introductory to the History and Etymology of the English Language. Their attention will next be directed to the origin and gradual formation of the Language, and its grammatical principles will be explained and illustrated, occasionally by comparison with the structure of the Greek and Latin tongues. Written exercises of the Didactic, Epistolary, and Oratorical class will be required from the Students, and Lectures will be given on the Principles of Translation, on Rhetoric, and the more important parts of the Belles Lettres. The Pupils of this Class will also be exercised in extemporaneous speaking; subjects for discussion being proposed from time to time by the Professor, and the debate being carried on under his immediate superintendence.

It is recommended that, in addition to Dr Crombie's Treatise on Etymology and Syntax, &c., the Philosophy of Rhetoric by Dr Campbell, and Dr Whateley's Treatise on Rhetoric, should be read by those who design to attend this Class.

There will be Lectures on English Literature in the course of the Session, the particulars of which will be announced hereafter.

FRENCH LANGUAGE.—P. F. Merlet, Esq.

Junior Class.—Monday, Wednesday, and Friday, 8 to 9 A. M. **Another Class**—on the same days, 2½ to 3½. **Senior Class.**—Monday Wednesday, and Friday, 3¼ to 4¼. **Another Class.**—Tuesday, Thursday, and Saturday, 8 to 9 A. M. Fee for each Class, £5.

Mr Merlet proposes to open an Evening Class on Mondays and Thursdays, from 7½ to 8½. Fee £4.

GERMAN LANGUAGE.—Professor von Mühlenfels.

Junior Class.—Monday, Wednesday, Friday, and Saturday, 8½ to 9½ A. M. **Another Class**—Monday, Wednesday, Friday, 2½ to 3½, Saturday, 11 to 12. —Fee for each Class, £5. **Senior Class**—Tuesday and Thursday 8½ to 9½ A. M., Saturday, 9¼ to 10¼. **Another Class**—Monday, Wednesday, Friday, 3¼ to 4¼. Fee for each Class, £5.

There will be Lectures on German Literature in the course of the Session, the particulars of which will be announced hereafter.

It is also the intention of Professor von Mühlenfels to give a Course of Lectures on Northern Literature, containing a survey of Icelandic, Swedish and Danish Literature, preceded by an historical introduction on Northern Mythology.

ITALIAN LANGUAGE.—Professor Panizzi.

Junior Class.—Monday, Wednesday and Friday, 11 to 12. **Senior Class**—Tuesday, Thursday, and Saturday, 11 to 12. Fee for each Class, £5.

If it is found to suit the convenience of Students, there will be Classes on the same days from 8½ to 9½ in the morning.

There will also be Lectures on Italian Literature in the course of the Session, as will be announced hereafter.

SPANISH LANGUAGE.—Professor Galiano.

Junior Class.—Tuesday, Thursday, and Saturday, 12 to 1. Senior Class—Monday, Wednesday, and Friday, 12 to 1. Fee for each Class, £5.

If it is found to suit the convenience of Students, there will be Classes on the same days, from 8½ to 9½ in the morning.

There will be Lectures on Spanish Literature in the course of the Session, as will be announced hereafter.

ORIENTAL LANGUAGES.—Professor Rosen.

There will be Classes for Persian, Arabic, Sanskrit, and Hindoostanee, and the hours will be fixed so as to suit the convenience of Students.

The Fee for the whole academical Session will be £6, and for three months' instruction £3 10s. for each Class.

HEBREW.—Professor Hurwitz.

Junior Class—Monday, Wednesday, and Friday, 9½ to 10½.—Senior Class, same days, 11 to 12. Fee for each Class, £5.

MATHEMATICS.—Professor De Morgan.

Junior Class.—First and second Divisions, Monday, Wednesday, Friday 9½ to 10½; and Saturday, 9 to 10½. Second Division alone, Tuesday and Thursday, 9½ to 10½. Fee £7.

The *First Division* of the Junior Class will contain those who are commencing their mathematical studies. A familiarity with the four first rules of Arithmetick is indispensably necessary; and an acquaintance with Vulgar and Decimal Fractions will be a great advantage. The instruction given will consist entirely of examination in Euclid, and practice in the operations of Algebra. Lectures will be entirely excluded.

The *Second Division* of the Junior Class will contain those who are acquainted with the First Four Books of Euclid, and with Algebra as far as Equations of the second Degree. The additional days given to this division will be devoted to Lectures on such of the more advanced branches as the Pupils are prepared for.

Senior Class.—First and Second Divisions, Monday, Wednesday, and Friday, 2½ to 3½. Saturday, 11 to 12½. Second Division alone, Tuesday and Thursday, 2½ to 3½. Fee, £6.

The Senior Class will contain all who have been instructed in Plane Trigonometry; and the subjects pursued will be Spherical Trigonometry, Conic Sections, the Theory of Equations, the Application of Algebra to Geometry, &c. The Additional hours given to the Second Division of the Class, will, in the first part of the year, comprise developments of the subjects which are treated of in the other days, and the Differential and Integral Calculus.

NATURAL PHILOSOPHY AND ASTRONOMY.

Professor, The Rev. Dr Lardner.

Junior Class.—Every day except Saturday, from 8½ to 4½. First Course, Mechanics. Fee £4. Ending in February. Second Course, Hydrostatics and Pneumatics. Fee £3 10s. Ending in June;—or to persons attending the whole Course, £7.

A connected series of Experimental Lectures on these subjects will be delivered on Mondays, Wednesdays, and Fridays, during the Session. The Mathematical parts of the science will be explained on Tuesdays and Thursdays, when examinations will also be held.

Senior Class.—Monday, Wednesday, and Friday, from 2½ to 3½. 1st Course, Light. Fee £2. 2d Course, Heat. Fee £2. 3d Course, Electricity and Magnetism. Fee £2. 4th Course, Astronomy. Fee £2. 5th Course, Geodæsy. Fee £1. Fee for the whole Course, £7.

ZOOLOGY.—Professor Grant.

Daily except Saturday, from 3 to 4; commencing on the 1st of February, and terminating at the end of April. Fee £2.

There will be a Summer Course, commencing in May.

BOTANY.—Professor Lindley. Fee £3.

The Lectures will commence in April, and will continue daily for three months. The first part of the Course will be devoted to Physiological Botany, and the Principles upon which the different Organs of Vegetable bodies are constructed. The second part will be confined to Practical Botany, for the purpose of studying which the Natural System will be principally employed.

POLITICAL ECONOMY. Professor Mac Culloch.

The Lectures will commence on the 1st of February, and will be delivered three times a week, from half past ten to half past eleven. The conversations and examinations will be held each Saturday at the same hour.

The course will be divided into two parts. The first part will relate to the Production of Wealth; the second part to the Distribution and Consumption of Wealth. Fee for the entire Course, £5; for each division, £2 15s.

A valuable collection of Works relating to Political Economy is provided for the particular use of the Students attending this Class.

JURISPRUDENCE.—Professor Austin.

The Lectures will commence in November, before which time the days and hour will be duly announced.

ENGLISH LAW.—Professor Amos.

The Lectures will commence on Monday the 2d of November, and will be given every Monday, Wednesday, and Friday, during the Session, from 6½ to 7½; except in Term time, when the Lecture will commence at a quarter before seven, and during the Quarter Sessions and Spring Circuit, when the Class does not meet. It is however in contemplation at these times to give separate Courses upon particular branches of Law, as will be more specifically announced hereafter.

There is adjoining the Lecture-room a Law Library for the use of the Students, which is open from five to nine in the evening; the books may also be consulted in the forenoon from ten to four o'clock, on application to the Librarian.

MEDICAL CLASSES.

Commencing 1st of October.

The Council have much satisfaction in announcing that the Right Hon. C. W. Williams Wynn has very liberally placed at their disposal his nomination to an Assistant-Surgeoncy in the service of the East India Company. The Council will before the end of the Session declare the qualifications necessary for competitors for this appointment, so far as relates to medical and classical acquirements;—but it is right now to state, that the strictest testimonials of moral character and general good conduct will be required.

It will be observed that the following Classes continue from October to the middle of May, and the larger Fee is for the whole course; but for the convenience of the Students the Course may be divided into two parts, and a separate Fee be paid for each.

ANATOMY.—Professor Pattison.

Daily, except Saturday, 1½ to 3. Fee £7; or for the First Division £4; Second Division £3.

The half hour from 1½ to 2 will be occupied by examinations on the previous Lectures.

PHYSIOLOGY.—Professor Bell.*

Tuesday and Thursday, 5 to 6. Fee £2.

ANATOMICAL DEMONSTRATIONS.—J. R. Bennet, A. B.

Daily, 11 to 12. Fee £5. First Division £3; Second Division £2.

The Anatomy of the human body will be completely demonstrated at least twice during the Session. The examinations take place on Saturday.

Surgery and Clinical Surgery.—Professor Bell. Monday, Wednesday, and Friday, 5 to 6½. Fee £5. First Division £3; Second Division £2.

Nature and Treatment of Diseases.—Professor, Dr Conolly. Daily, except Saturday, 4 to 5. Fee £6. Or for each Division £3.

Midwifery, and Diseases of Women and Children.—Professor, Dr Davis. Monday, Wednesday, Friday, and Saturday, 9 to 10. Fee £5. First Division £3; Second Division £2.

Clinical Medicine.—Professor, Dr Watson. Monday and Friday, 12½ to 1½. Fee for the whole Course £4; for Half the Course £2.

Materia Medica and Therapeutics.—Professor, Dr Thomson. Daily, except Saturday, 3 to 4. Fee £6. First Division £3; Second Division £3.

A very complete Museum has been formed by the Professor of this department for the illustration of his Lectures, to which the Students of his Class will have access under certain regulations.

Instructions in Pharmaceutical Chemistry will be given to private Pupils in the Professor's Laboratory in the course of the Session, the particulars of which will be announced hereafter.

Chemistry.—Professor, Dr Turner. Daily, except Saturday, 10 to 11. Fee £7. First Division £4; Second Division £3.

The Professor will give one or more Courses of Practical Chemistry, in which the pupils will be instructed in the manipulations of experiments and processes. Further particulars will be announced hereafter, and the Professor will in the mean time give information on the subject to those who may apply to him.

Comparative Anatomy.—Professor, Dr Grant. Daily, except Saturday, 3 to 4. Commencing on the 15th of October, and terminating at the end of January. Fee £2.

Botany.—Professor Lindley. Daily, during the months of April, May, and June. Fee £3.

Medical Jurisprudence.—Professor, Dr J. Gordon Smith. Monday, Wednesday, and Friday, from 7½ to 8½. These Lectures will commence in October, and be continued until May. Fee £4. First Division £2; Second Division £2.

If the Class is sufficiently numerous, the Professor will instruct the Students of Medicine, and those who are not of that profession, separately; but as the object of instruction will be a common one, all the pupils will be at liberty to attend upon every occasion.

The Museum of Anatomy is open to the Medical Students every day. Besides an extensive series of preparations, it contains a large collection of original drawings in illustration of Morbid structure: and both collections are receiving additions regularly. Descriptive catalogues are preparing, which will be ready next Session.

* To comply with the Regulations of the College of Surgeons and Society of Apothecaries respecting Attendance upon Courses of Anatomy and Physiology, the Student must attend the Lectures of the Professor of Physiology as well as those of the Professor of Anatomy.

HOSPITAL ATTENDANCE.

The Students have the power of witnessing Hospital Practice at the Middlesex Hospital, which is in the immediate vicinity of the University. Dr Watson and Mr Bell deliver Clinical Lectures in the University upon their cases in the Hospital.

The usual Terms of Admission to the Middlesex Hospital are as follows :

Physician's Pupil. Six months, £10 10s. Twelve months, £15 15s. Perpetual, £22 1s.

Surgeon's Pupil. Three months, £10 10s. Six months, £15 15s. Twelve months, £21. Perpetual, £52 10s.

Entrance Fee to the Apothecary, 1 guinea ; to the Secretary, 5 shillings.

The Pupils of the University are to be admitted to the benefit of attendance at the Middlesex Hospital for the following fees :

Medical Practice. Academical Session of nine months, £12 12s. ; but no Certificate is granted without completing the attendance of the year, and paying up the Fee of £21.

Second Session, £12 12s. ; after which the Pupil will have free admission.

A Fee of 21 guineas at one payment, or of 9 guineas in addition to the first £12 12s., if paid before the conclusion of the first Session, will also entitle the Pupil to free admission.

Entrance Fee to the Apothecary, 1 guinea ; to the Secretary, 5 shillings.

Surgical Practice. The same as the above.

DISPENSARY ATTENDANCE.

The Council have established a Dispensary in George Street, Euston Square, which is attended by the Professors of the Nature and Treatment of Diseases, Materia Medica, Midwifery, and Anatomy ; and affords to the Pupils the benefit of Dispensary practice under their teachers. Fee, for nine months attendance, £5.

FEES.

1. *Non-nomination Fee.* The Class Fees stated above are payable by Students nominated by Proprietors : those not nominated pay an addition upon those fees according to the following scale : viz.

	£	£	s.	d.
If the Class Fee be 1, an addition of	0	5	0	
" " 2, " "	0	10	0	

and so forth. But this extra payment ceases so soon as it amounts to £4 10s.

2. *University Fee.* Students who are matriculated pay a Fee of £2, and are exempted from further payment on this head for four years. Occasional Students pay annually a Fee of 10s. for one Class, and £1 for two or more Classes.

EXAMINATIONS AND CERTIFICATES.

Every Professor devotes a certain portion of the hours of instruction in each week to the examination of his Pupils. No junior Student is exempted ; students of more advanced years may claim exemption, but all who wish to obtain Certificates must submit to these examinations.

There will be three public examinations of each Class in the course of the Session ;—the first immediately before Christmas, the second immediately before Easter, the third at the beginning of July, and upon the last occasion Prizes and Honours will be awarded. In the Medical Classes, however, the final examination and the distribution of Prizes and Honours will take place about the middle of May.

The results of the two first examinations will be taken into account in determining the merits of the competitors for honors at the conclusion of the Session.

LIBRARY.

A collection has already been made of more than eight thousand volumes, and it is daily increasing. It consists chiefly of such works as the Students must consult in the prosecution of their studies at the University. The Library is open every day from ten in the morning to four in the afternoon, and the books may be consulted by all the students of the University.

Separate Libraries have been formed for the use of the Law and of the Medical Students, to which they will have access in the evening.

HOUSES FOR THE RECEPTION OF BOARDERS.

The Council feel that their direct interference in the management of houses opened for the reception of boarders must necessarily be inefficient; and unwilling to give a pledge which they cannot redeem, they do not attempt to lay down any rules for the conduct of the students beyond the walls of the University. A Register has been opened at the shop of Mr Taylor, the bookseller and publisher of the University, No. 80, Upper Gower Street, in which the names of such persons as are willing to receive boarders are inserted, provided they comply with certain regulations. The names of those who shall be discovered to have evaded the regulations, will be erased from the Register, and notice of that erasure will be sent to the parents or relatives of all the students who may board in their houses.

A Book has also been opened at Mr. Taylor's, for receiving the names of Private Tutors.

NOTICES.

1. The History of France, from the foundation of the Monarchy to the Death of Louis XVI. Interspersed with entertaining Anecdotes and Biographies of Eminent Men. By William Grimshaw, Author of a History of the United States, &c. Philadelphia. Towar & Hogan. 1829. pp. 302.

2. The Life of Napoleon, with the History of France from the Death of Louis XVI. to the year 1821. By William Grimshaw, Author of a History of the United States, &c. Philadelphia. Towar & Hogan. 1829. pp. 285.

'WITH what book shall I commence the study of law?' said a young gentleman who had just entered as a student in the office of one of the most celebrated advocates of New England. 'Read,' replied his instructor, 'the most entertaining and interesting law book you can find in my library.' If a young person were to inquire of us 'with what book it would be most suitable for him to commence the study of history,' we should make a similar reply. It is entirely immaterial what period of history, the student may commence with, if it be only sufficiently interesting and striking to fix his attention and awaken his curiosity. When he has become acquainted with the history and characters of such a period, he will be sure to trace its events back to

their causes and forward to their effects, till his reading has embraced most of the range of biographical and historical works which can illustrate them. For instance, should he begin with the Life of Charles V., or of Martin Luther, or some history relating to the period of the revival of letters, he would naturally read successively the lives of the eminent men of that period who flourished in Italy, France, and England. Finding a singularly brilliant constellation of great characters and events adorning that period of history, he would be led to compare it with the darker ages which preceded it, and to trace the important discoveries of the sixteenth century to their effects on the immediately subsequent times. Such a course would be much more interesting, and less toilsome, than if he had by express command of some tutor, commenced with the fabulous ages and waded through ancient history, that of the middle ages, and lastly, modern history down to our own times, even though he had confined himself all the while to compends and abridgments.

'Take the most entertaining history you can find,' we should say to our young friends, 'read it attentively; and then seek for such works of biography, the drama, or even historical romance, as will throw further light upon the characters and events of the period to which the first history which you read, relates. Be critical and inquisitive. Regard the characters with as much personal interest as possible. You will find them lauded by the writers of one party, and reviled by those of another. Balance their opposite statements, judge for yourself, and record in your common-place book the result of your decision. A single important era of history read in this manner will place you on a vantage ground on which you may prosecute your subsequent historical researches, whether minute or general, with far greater satisfaction than if you had adopted a straight forward, chronological course of reading.'

The Life of Napoleon is a very good work to put into the hands of a youth in whom we desire to awaken a curiosity and excite a thirst for historical reading. It embraces a most striking and important period of the world's history, and as its events are intimately connected with the previous history of many countries besides France, it will naturally prepare the juvenile reader for a very extended and useful course of reading.

The works of Mr Grimshaw named at the head of this article, are executed with his usual faithfulness and ability. They are rendered far more interesting than condensed histories usually are, by the abundance of anecdotes and personal traits which he has thought proper to introduce. We think this course to be particularly appropriate in works intended for the young. A piquant anecdote will leave a stronger impression of a character or event than the most minute, formal, and grave account. Those which

Mr Grimshaw has presented in his *Life of Napoleon*, are singularly happy and well suited to display the genuine character of that distinguished personage.

We cordially recommend these, as well as the other historical works of Mr Grimshaw to the attention of parents and teachers.

Johnson's Dictionary, improved by Todd, Abridged for the use of Schools ; with the addition of Walker's Pronunciation ; an Abstract of his Principles of English Pronunciation, with Questions ; a Vocabulary of Greek, Latin, and Scripture Proper Names ; and an Appendix of Americanisms. Boston. Benjamin Perkins & Co. 1828.

To compose the several school dictionaries which are in common use, so as to form a correct judgment of their merits, is a task which we cannot expect the purchaser to perform ; and it is scarcely more reasonable to expect this service from common teachers, or from those gentlemen who are so liberal in furnishing *recommendations*. Neither ordinary purchasers, nor the teachers of common schools, have the leisure, if they have the qualifications, requisite for giving these works a critical and judicious examination : and, as for the learned clergymen, presidents, and professors, who recommend these and other school books at sight, we are often amazed, to see how far they are actuated by the charity which 'thinketh no evil,' but 'hopeth all things, and believeth all things.'

We have had occasion to compare most of the school dictionaries in common use not only with each other, but also with the larger dictionaries, and with the abridgments of Johnson and Walker's Dictionary, the title of which is at the head of this article. This work was published during the last year, and has not yet obtained a very extensive circulation. We shall give a few reasons for preferring it to any other school dictionary, that we have seen.

1st. The definitions are clearer and more free from redundancies. In this respect, however, the improvements are not very great. Much attention has been bestowed on the definition in the English abridgments of Johnson's, Walker's, and Perry's dictionaries ; and the American editors of such works find but few corrections necessary.

2d. This book contains many useful words, which were omitted by Johnson and Walker, and have been added by Mr Todd.

3d. The pronunciation is given with more accuracy than in the other works of this kind.

4th. The Appendix, comprising eleven pages, contains a judicious solution of Americanisms, and of words used with a different meaning in this country, from what they have in England.

This is not only interesting to children, but useful in showing the more common differences between English and American usage.

5th. We recollect no other instance in which Walker's Principles of Pronunciation have been presented in a correct and easy style, and made so intelligible, that children can study them with pleasure and advantage. Questions are here appended to the several sections, which will greatly facilitate the study of the Principles. If this book possessed no other advantage over other abridgments, we should consider it worthy of particular notice for the eight pages of the Principles of Pronunciation.

6th. The typographical execution of the work is uncommonly neat and accurate.

We have not discovered that this abridgment is in any respect more imperfect than others; and we think that the advantages which we have mentioned, entitle it to be generally used.

Studies in Poetry ; embracing Notices of the Lives and Writings of the best Poets in the English Language, with a copious selection of elegant Extracts ; together with a short Analysis of Hebrew Poetry, and Translations from the Sacred Poets, the whole adapted particularly for the use of Young Ladies, and designed to illustrate the Rules of Rhetoric, and teach their application to Poetry. By George B. Cheever. Boston. Carter and Hendee. 1829.

We have had an opportunity of examining this work in manuscript, and as it will be published in a few days, we thus early take an opportunity to introduce it to the public attention.

The plan of the work is to present a view of the best poets in the English language, with brief notices of their lives and writings, and a few choice and beautiful specimens. It is to be used to instruct pupils in the rhetoric of poetry, by exhibiting to them the great masters of the lyre, and pointing out the distinguishing traits of each. The study of such a work cannot fail to make the student familiar with the principles of criticism ; to teach him to discriminate between excellences and faults ; between true and false taste. As the pieces are all of a perfectly pure moral character, and many of them of a religious cast, their effect must be to soften and elevate the heart, while it cultivates, corrects, and refines the taste.

We esteem the work an important one, and we hope to see it used, not only in all seminaries for young ladies, but in other schools also.

The Youth's Keepsake.—A Christmas and New Year's Present. Boston. Carter & Hendee. 1830.

This volume we can recommend to the public, as one of the happiest, among the many successful attempts, made at the present day to produce suitable works for the instruction and amuse-

ment of youth. In the literary department, it is indeed a model of this species of composition, and displays more talent and taste for the peculiar kind of writing required for youth, than any volume that has fallen under our observation. Most of the pieces are evidently the productions of superior minds.

The embellishments are pleasing, and two or three of them beautiful. The 'Torn Hat' is exquisite; and 'Charity' is very good. On the whole, we seldom give commendation to any work, with more hearty good will, than we do to this.

The Pearl ; or Affection's Gift. A Christmas and New Year's Present. Philadelphia. Thos. T. Ash. 1830. pp. 220.

We cannot but regard the character of the books called Christmas and New Year's presents, especially those intended for young persons, as a matter of some moment. The manner in which they are bestowed; the feelings of interest and curiosity with which they are expected; and the lively excitement of the season, when it is usual to present them to our juvenile friends; all unite in leading those who receive them to attach considerable importance to the whole affair, and prepare their minds for the full effect of their contents, whether it be favourable or otherwise. The style of these works should therefore be pure, the sentiments unaffected, the diction chaste, and the materials of the narratives and descriptions such as are suited to elevate the moral and intellectual character of the young.

We wish that this important consideration had been more carefully regarded by the authors of many of the pieces in those *Annals*, which are not expressly intended for youth, but are frequently presented to them, through the inconsiderateness of friends. A very cursory review of this class of works will serve to satisfy any one, of the utter unfitness of several of them, for the perusal of those whose minds are pure, unsophisticated, and peculiarly susceptible of impressions from works of imagination.

The Pearl for 1830 is executed with a degree of judgment and good taste which does honour to the editor. The literary contents are principally in prose. This is as it should be. Few young persons are capable of relishing the peculiar beauties of poetry, and short effusions are best adapted to please and affect the juvenile mind. Those from the pen of Mrs Sigourney and of Mrs Wells in this volume, are distinguished by those characteristics so seldom united—the genuine poetical feeling, and a diction suited to the capacities of the young. The narratives are interesting, and of uniformly excellent tendency. The stories entitled 'The Souvenir,' 'The Way to have Friends,' and 'The Log Bridge,' are particularly happy, both as it respects the choice of incidents, and the moral designed to be inculcated.

We notice among the painters whose designs adorn the work, the names of Gainsborough, Westall, and Sully. The engravers

are Steel, Neagle, Kelly, Kearney, and Ellis: It is unnecessary to add, that the embellishments are excellent.

Outlines of Ecclesiastical History, on a new plan, designed for Academies and Schools. By Charles A. Goodrich. Illustrated by Engravings.

The importance of Ecclesiastical History, as a subject for school instruction, cannot be doubted. No plan of education can be esteemed in any degree complete, which does not embrace this most interesting portion of the annals of our world; nor can justice be done to those who are committed to the charge of teachers, by neglecting to use, at an early period of life, the powerful means afforded by it, for establishing their confidence in Christianity. Next to a careful examination of the scriptures themselves, we know of no study better fitted to secure our respect for the religion which is founded upon them, than that of the annals of that religion.

It is certainly a matter of great delicacy to attempt a work on this subject for schools. There are some points of ecclesiastical history which touch upon disputed ground; but this, though it presents a difficulty to the successful execution of such a task, affords no reason why it should not be undertaken. Perhaps the best that we can expect, is, that some individual will give us a history on this subject, offering of course his own views on those points which are controverted, but with candour, and deference to the opinions of those who dissent from him in these particulars.

The work before us seems to be decidedly of this character. The writer does not conceal, or attempt to conceal, his own opinions, but he states them generally with moderation and candour. His style is neat and perspicuous, and his arrangement enables him to present dates, facts, and events, with peculiar clearness and a high degree of interest. We have ourselves derived great pleasure from the perusal of the volume, and very cordially recommend it to the notice of those interested in education.

Books for Children.

Peter Parley's Winter Evening Tales. Carter & Hendec. 1830.

This work contains eight coloured engravings, and about as many Tales. It is beautifully got up, and we doubt not will be welcomed by the little admirers of Peter Parley. It is, we think, the prettiest of the popular books that have come from the quill of this 'great unknown,' in nursery literature.

The North American Arithmetic. Part First. Containing Elementary Lessons. By Frederick Emerson, Principal of the Department of Writing and Arithmetic, Boylston School, Boston. Boston. Lincoln & Edmands. 1829. pp. 43.

When Colburn's First Lessons in Arithmetic appeared, all were astonished by the simplicity of his method. The principal objection then made to his book, was that it was so easy, or consisted of such simple combinations, that it would require too little mental exercise, and would give too little information. It was, however, soon ascertained that the minds of scholars were exercised much more by this, than by the old method; and that these questions were sufficiently difficult, for First Lessons in Mental Arithmetic.

It is now thought by many persons that a still greater degree of simplicity is necessary in an elementary arithmetic. The little work before us, by Mr Emerson, is designed to show the scholar by pictures how to solve the questions. A few examples will explain his method.

Lesson I. presents pictures of ten apples, with the words *one, two, three, &c.* over them.

Lesson II. arranges stars in lines containing from one to ten.

Lesson III. gives examples of adding one star to one, to two, to three, &c. as far as ten.

Lesson IV. teaches the pupil the *figures* representing numbers as far as ten.

Lessons V. and VI. teach the scholar to count and read by figures as far as one hundred.

The first lesson in Addition begins thus:—*How many trees are 1 tree and 2 trees?* Under this question one tree is placed separately, and two are set together. Several other examples are given with pictures; and then a table is given, in which 1 is added to the first ten numbers.

The next lesson presents questions and pictures for adding 2 to other numbers; and then gives a table for that purpose. The remaining lessons in addition follow this plan, except that unit marks are used instead of pictures, when the numbers become large.

The mode of solving questions in subtraction and multiplication will be inferred without any examples. In division, the third question is this: 'A certain farmer has 6 oxen, and it takes 2 of them to make one pair. How many pairs of oxen has he? How many *twos* are there in 6?'

Six unit marks are placed under this question, and they are distinguished into pairs. This example will show the method pursued in division.

The method of showing the connexion between division and multiplication, is very simple and proper. For example: 'How many times 3 in 9? How many are 3 times 3?' 'How many times 3 in 24? How many are 3 times 8?'

We have now passed over thirtynine pages of the book; and we are disposed to say that it is, thus far, very well executed. The style of the questions is not always easy and familiar; but the solution is rendered perfectly intelligible. We do not think the plan too simple for very small children. A few of the questions in each section are so fully solved, and the solution is presented so plainly, that little mental exercise is required except *counting*; but there are many other questions immediately following these, which require the whole solution to be performed mentally.

In solving questions by Colburn's Plates, very small children are perplexed by having so many more marks presented at one

view, than are required by any one question. In Emerson's book, no more pictures, marks, or figures, are presented, than the occasion requires.

The typographical execution of the work, is very correct and beautiful; and the book is more attractive and interesting to children, than any other in this science.

On the fortieth page commences a lesson on Fractions. Only three pages are occupied with this subject; but we regret that they are not better filled. Instead of illustrating Fractions by dividing single objects, the author has divided abstract numbers, and numbers of objects. In this respect, we think he has deviated from his own plan, and fallen far short of the simplicity of Colburn.

The remainder of the book consists of Miscellaneous Examples. In these, the author seems too anxious to have something in his book, hard enough for a class of scholars for which his book is not designed. This is a common error; and Mr Emerson has indulged in it less than most of his predecessors.

The Little Philosopher, or the Infant School at Home. By Erodore. Boston. Carter and Hendee. 1829. 18mo. pp. 36.

The first number of the Little Philosopher has already been noticed in the Journal. The second number is adapted to be equally useful. It contains directions for using the book in families and schools; and then treats of the air, heat and cold, the weather, the sun, the moon, and the stars; and closes with a few 'Experiments and Questions on the subjects of this and the preceding number.' The following extract will give a fair specimen of the work, excepting that it contains most of the questions which we consider exceptionable.

'When we say it is a warm day, or a cold day, what do we mean is warm or cold? The air all around us.

'What makes the air and the ground warm?

'Is it warmest in the day time or at night? Why?

'Is it warmest in summer or in winter? Why? Because the sun is more nearly over our heads in summer than in winter?

'What makes our bodies warm? It is not known.

'How do you know that it is not our clothes? Because our faces and hands are warm when they are not covered with clothes.

'What good do our clothes do? They keep our bodies from becoming cold by the cold air.

'If you were to wrap a stone in flannels and furs, would it make it warm?

'Would it keep it from cooling fast if it was already warm?

'Is that all which clothes do for our bodies?

'Why would any thing hot cool faster without something around it? Because the air which was near it, would move away, and cold air would be continually coming to it and cooling it.

‘ Suppose a cold wind should blow upon a piece of hot iron, would it cool faster or slower? Why? ’

‘ Suppose a warm wind should blow upon a piece of ice, would it melt faster or slower? Why? ’

‘ Suppose you blow upon a snow-ball, will it melt faster or slower, where you blow upon it? ’

‘ Do people ever keep ice all summer? How? ’

‘ When you are out in the cold, which becomes cold soonest, your arm or your hand? Your feet or your hands? Your feet or your side? ’

‘ Why do your feet become cold, sooner than your side? Why do your fingers become cold, sooner than your wrist? ’

‘ Suppose you run or walk very fast, does it make you warm or cool? ’

‘ Suppose you rub your hands together some time, does it make them warm or cool? ’

‘ If you rub two pieces of wood together very hard, will it make them warm or cool? ’

‘ If you wet any thing, will it be warmer or cooler when it is drying? Will it be so if you wet it with warm water? How can you prove it? I can dip my finger in warm water and then hold it in warm air, and it will feel cool while it is drying; or I can wet my finger with my tongue, which is warm, and the spot will immediately feel cool.’

Some of these questions require answers which many families, and some schools, may not furnish. For example: ‘ Why do your feet become cold, sooner than your side? Why do your fingers become cold, sooner than your wrist? ’ ‘ The book should have answered these, or have given some principle or fact, by which they could be solved.

‘ The experiments mentioned in the last paragraph of the above extract, will not prove satisfactory.

Our readers may think an apology necessary for our devoting so much attention to the Little Philosopher; and we have two at our pen’s end. First, these books really merit all the attention that we can give them; and, second, we have lately examined so many which are utterly worthless, that, on finding a good one, we find ourselves entitled to more than common indulgence.

Peter Parley’s Tales of Animals, embracing descriptions of nearly 300 Quadrupeds, Birds, Fishes, Reptiles, and Insects. Illustrated by numerous Engravings. Boston. Carter & Hendee. 1829.

We are not certain that the author of this volume has not made a mistake in bringing it forward under the name of Peter Parley. It seems to assign to it a juvenile character which does not properly belong to it; for it is in fact written for more advanced classes in schools, and to such, it is certainly well suited.

It is avowedly drawn in a great measure from the Library of Entertaining Knowledge, and seems to embody the most valuable and interesting parts of that work, so far as they relate to the higher classes of quadrupeds.

The author has not been content to insert the loose accounts which have been copied from one compend of natural history into another, for half a century—but he seems to have consulted the latest and best authors, and has therefore given to the work a degree of authority which does not usually attach to abridgments of this sort. He has also taken pains to arrange the descriptions of animals under certain heads, as form, size, colour, appearance, habits, countries, &c., and thus, by presenting one point at a time to the attention of the pupil, has given his work great perspicuity; at the same time that it affords the teacher easy and effectual means for examining his pupils.

The work is richly illustrated with engravings of animals, many of them of an amusing character, and calculated to impress the mind of the student. It is also provided with a frontispiece, which exhibits in outline the principal animals according to their comparative size. There is also a scale of feet in the margin which shows their positive dimensions. The general idea of this interesting and valuable plate, seems to be derived from Bingley, but it is the most complete device of this sort we have seen. The work cannot fail to be highly useful in schools; and, as a book for general reading, should be in every family.

Peter Parley's Method of teaching Geography to Youth—with nine Maps, and seventyfive Engravings. Hartford. H. & F. J. Huntington.

This work is well calculated to answer the purpose for which it is written, viz. to teach the first steps in geography. Such a work is much wanted, there being no one, either expressly designed for, or suited to this end. There are several valuable works for more advanced scholars, but none that is calculated to help the child easily and agreeably over the somewhat difficult grounds which lie between the primary reading lessons, and this popular and useful portion of juvenile study.

The neatness and clearness of the maps, the abundance of the illustrative cuts, and the free and colloquial (though we regret to say, somewhat careless) style of Mr Parley, together with the attractive qualities of the white paper and large print, are calculated to make the book a favourite with pupils, and we trust, with their teachers. It appears to us that schools which have the use of a book like this, must profit by it in the more rapid and thorough progress of its pupils, and as we esteem everything that promises advantage to youth of importance, we commend this book to them, who, with ourselves, are interested in the cause of education.

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ART. I.—*Thoughts on Primary Education,—Elementary Instruction in Reading, Writing, Arithmetic, Grammar, and Geography.*

[Resumed from last number.]

No child should be permitted to read a single sentence, without being able, in the first place, to comprehend the meaning of every word in that sentence. But how different is the common practice. Children are hurried into pronouncing before they know their letters ; into reading before they can pronounce ; and into the Bible, Pitt's speeches, and Addison's philosophical speculations, before they can define the word *baker*. This want of attention to definitions has been seen and lamented by many teachers. To remove the difficulty, some have proposed a spelling book with the definitions annexed to each word. If such a book were in general use, however, there is reason to believe that the study of it would degenerate into a routine of committing to memory, without acquiring ideas ; the very rock on which we are all wont to split. Another error which infests all our first books, without exception, would be likely to creep into this too, viz. introducing words according to some artificial order, without regard to the wants of children. Now those words should be first taught to children which they use most, and are in most need of ; and their reading lessons should be constructed on this principle. But

what child will ever use half the words in some of the tables in our spelling books? And suppose he should; if he does not need them *now*, why should he commit them to memory, until he has made himself thoroughly acquainted with those which he *does* need? Will it be said that, considering the various wants of various children, a book cannot be prepared on this plan,—since what would be necessary for one child in one place or situation in life, might be entirely useless to another in different circumstances? But perfection is not to be expected: we must come as near perfection as we can. Nor, after all, are the wants of various children so widely different as has been supposed. They are, in this respect, nearly the same.

A first book constructed on the plan suggested in the last number of the Journal, would come as near the real wants of children as any of which I am at present able to conceive. It is especially desirable, because it would teach the elements of science rationally, not mechanically. I know of no other plan of teaching children to define words extensively, except the one there proposed,—if carried out into all its applications. Nor do I know of a better way of teaching reading. The pupil would thus read his *own* language, his *own words*. And how could he avoid reading them naturally? only by being put forward too fast, an error as common as it is lamentable.

If these views are correct, how deficient our school books must appear! Our spelling books in general what are they? Fit for philosophers it may be—fit for those who already possess a liberal education, but evidently unfit for children,—for beginners. Who is the disciple of Pestalozzi that shall give us a book in his spirit, and constructed on a rational plan? Such a book, or rather such a set of books, would do more towards preparing a child to teach himself, to educate himself, than all the various elementary works that have ever been used in common schools. I do not mean to say that no other books would be necessary,—doubtless they would; and this preparatory work would be a key to unlock their treasures. This work alone, however, without any others, would be worth more than all others without this.

Perhaps no books are more unfit for the purposes to which they are usually applied, than our reading books. I know there has been an improvement in their character, within a few years; still however, they are, with a few exceptions, altogether unfit for the use to which they are applied; unfit for

young readers to learn to read in, until they have made the necessary preparation. There would be a time in the course of a rational education, when such books as 'Leavitt's Easy Lessons,' 'Nursery Morals,' 'Early Lessons,' 'Popular Lessons,' 'Jack Halyard,' and a few others might be useful, at least much more useful than they now are : for at present they do very little good. Then there is a set of books exceedingly well adapted to the wants of those who by long practice have acquired an accurate knowledge of the meaning of their words. Such for instance are the 'American Preceptor,' and Murray's reading books.

Valuable as the American Preceptor would be to those who were sufficiently advanced to use it, its use in our common schools at present is highly pernicious. As a member of the Board of Visitors in the town where I now reside, I have found it my duty to hear children, who were scarcely able to read the simplest combinations of words of one syllable, attempt to read in the American Preceptor and English Reader. Nothing but a sense of duty could make me submit to so much pain as I have suffered at these visits. For the exercises from first to last were performed without interest. The reading especially was calculated to disgust. It consisted of a mere repetition of words, of which the pupils neither understood the use nor the meaning. One exhibition of this kind in particular I shall never forget. A class of scholars who were just able to read the simplest sentences which could be devised, were directed to read a piece in the American Preceptor, on profane swearing. Most of its paragraphs, consisting of from four to ten lines each, contained at least twenty words, of which not a scholar in the class could give any thing approaching to an accurate definition. One of the paragraphs, of twelve lines, contains more than forty words of the above description. I here quote the first paragraph of the piece, as it exhibits a fair specimen of the whole. 'Few evil habits are of more pernicious consequence, or overcome with more difficulty, than that very odious one of profane cursing and swearing. It cannot be expected that the force of moral principles should be very strong upon any one who is accustomed, upon every trivial occasion, and frequently without any occasion at all, to slight the precepts and character of the Supreme Being.' Now of the many nouns, adjectives, and verbs in this paragraph, not a scholar in the class had any knowledge of the definition of more than *three*, nor any adequate idea of even these. Now how im-

proper a selection was here made ! No wonder children hate their books and school when thus managed. Nor is it any wonder that we have few good readers among us.

With respect to the Bible as a reading book, I have a few words to add. The Bible contains the word of God. With it, should children associate, from their earliest years, sentiments of reverence. They should never touch it, nor if possible be suffered to see any one else touch it, with indifference. If they do, and if it be often repeated, they cease to reflect on its importance, and lose their reverence for it. If it be used as a common reading book in school ; if it be suffered to lie by the side of the English Reader, the Preceptor, and the Spelling Book ; if its leaves are turned over and over a thousand times a day, what, I ask, will be the consequence ? The answer is at hand. It becomes associated in their minds with the Spelling book ! They come to maturity with these associations, and either become practical infidels, or discover their error at so late a period of life that it is next to impossible to reform.

It has already been observed that the best way to learn to *write*, is, to be in the constant habit of writing from earliest infancy ; first, with chalk, next with a pencil on a slate, and lastly on paper. And I cannot but think that to spend any time for the special purpose of learning to write, is altogether unnecessary. Still, as a majority of the world believe and practice differently, I venture to offer my thoughts on the subject.

Too many things are required of the learner at once. In beginning to write as is commonly taught, the following points are to be attended to at the same time, viz. Position of the body and arms, position of the paper, manner of holding the pen, size, length, slant, distance, and both the absolute and relative proportion of the marks. Now, requiring a minute attention to all these points at once, confuses a beginner. Even if we ourselves have had the good fortune to escape so awkward a predicament, we may judge a little of the tyro's confusion, by attempting to move one hand horizontally, and the other perpendicularly, at the same time. We shall thus obtain a faint idea of the unpleasant situation in which we place a child when he begins to write. While he tries to give his mark the proper size, length, or slope, he will, almost of necessity, forget his manner of sitting, or holding his pen ; thus exposing himself to the frowns—perhaps blows, of a tyrannical or ignorant master.

The scholar is better able, in the view of some, to overcome these difficulties, if we defer writing till a more mature age. I know well that a person of twelve or fifteen years of age will learn much *faster*, than at an earlier age ; and he ought, for his time is worth more ; but whether the value of the time, (at a fair estimate,) which is taken up in learning to write in early life, will be greater than that of so much time as will be necessary to make the same proficiency in later years, may be a question. It has also been said that those who never write a word till they come to years of discretion, will make *better* writers than those who begin very young. What proof can be adduced in support of the assertion I know not ; but suppose it were true that a person, commencing thus late, would write more *elegantly*, yet do we not in a case of that kind sacrifice too much to elegance ? I have no wish to undervalue an elegant hand writing, it is a desirable thing ; but I would not give up utility for the sake of it. To write plainly and with despatch, are, in the common walks of life, of more consequence. One thing I am sensible favors deferring the subject of writing to years of discretion. The pen would be held better. And yet there are some men who hold their pens as badly as possible, who yet write with elegance and rapidity. I have sometimes even doubted whether young persons would not write better by suffering them to take their own way as to holding a pen, at least after giving them our opinion and the reasons on which it is founded. Nature has given us constitutions physically different. Perhaps the best we can do is to conduct the education of children in such a manner as to carry out and perfect their peculiarities, rather than attempt by artifice, or system, to bring them to a given standard. To think of making them write a *similar hand*, is undoubtedly foolish. And perhaps the idea of making them sit or hold the pen exactly alike, is equally futile.

Suppose, however, every objection which has yet been brought up were valid, there is one consideration which must forever decide the point in favor of commencing early ; and that is the fact that greater, far greater progress will be made in every other science by one who can, than by one who cannot write. Indeed, nothing seems to me more unnatural or irrational than the pursuit of other branches to the neglect of writing. The plan which has been suggested in a former essay, could not, as will be seen, be prosecuted at all without writing. It is my opinion that by prosecuting our studies in

the manner there laid down, or in the spirit of the plan there proposed, every scholar would become a good writer, without devoting a moment of time specially to the art of writing.

Yet suppose it were necessary to teach writing as a separate thing, I maintain that by teaching a child to write first with chalk, and next with a slate pencil, we should be introducing him to the subject gradually. He might next be taught how to hold his pen; but for the first three or four days he should be permitted to write when and what he pleased. A model of a hand, with a pen properly placed in it, formed of wax or some soft material—or an engraving to the same intent, might be kept constantly before the eye of the learner. During this time, and for some time previous, he should be exercised in combining the elements of letters in various ways; such elements to be prepared of paper, or thin plates or slips of metal, justly shaped and proportioned. It is well known that the number of elements which go to form the letters of the alphabet, are only six or eight, besides a few knots, loops, &c—though for the benefit of the scholar it would be well to have a number of each kind, especially of the *upper* and *lower curve* and the *o*. If these were accurate in their proportions, and if the scholar had many of each sort, he might be pleasantly and profitably employed in putting them together so as to form words, and even simple sentences for spelling, reading, &c. These exercises would both interest and instruct; and remove one of the great difficulties in the way of managing young children at school, viz. the want of employment. Only furnish business for children which pleases them, and you may spare the rod, as well as much lecturing and catechising.

After this, the scholar might proceed to writing the straight mark; when he could shape this properly, he might be taught the proper slope of letters; and thus he might proceed, step by step, till he became able to write a good hand. It will be seen that my object is to have only one thing done at a time, or at least to have the learner have but one object in view at a time; for if the same act, if one single blow can be so struck as to bring about several results as a natural consequence, so much the better. Such has been shown to be the fact in contriving sentences to include, and make sense with, the words of a given lesson. In this way, the scholar, though he has but one object in view, is actually making progress in more than half a dozen different branches of science. One important point I had almost forgotten. Every child should be taught as early

as possible to make his own pens. And here I would repeat a sentiment which I have often laid down in some shape or other, that we should have but one object immediately in view at a time, and endeavour to understand one thing perfectly, before we proceed to another. But whether writing be taught separately or not, there can, it seems to me, be no doubt that we ought to begin writing on a slate as early as we begin to do any thing, and carry it on simultaneously with other studies.

We not only err in presenting *matter* to children for reading lessons which is altogether beyond the reach of their capacities, but our *manner* of teaching this important branch is defective and erroneous. The reading lessons of children are often ten times too long. Every instructor will concede that it is better for his pupils to read *little*, and read that little *well*, than to read a great deal with inattention. Why, then, should he not practise according to his principles? Why are scholars suffered to stammer over whole pages of matter which they do not understand? In answer to a question of this sort, an instructor lately told me that it was necessary for children to read over a great deal at a time, even if it was not understood, that they might become acquainted with words and be able to pronounce them at sight, without hesitating. I need not say that his remarks were thought unworthy of a serious answer; for my opinion on this point has already been given. Yet I am entirely ignorant of a better apology for so wretched a practice, except ignorance; which is always more or less excusable. I have frequently heard a class of three or four, read five or six pages at a lesson, from the more difficult lessons of Bingham, Murray, or Cooke. And the bare *reading* of these pages constituted the whole of the performance. True the instructor had given out, at some previous period, such general rules as the following: 'Pronounce every syllable and even every letter distinctly.' 'Read as you talk.' 'Observe the pauses.' Now these rules are good, but of what use are they to children, unless put in constant practice, and enforced by the instructor's example? Obviously of no use at all. For if they are of any consequence, they ought to be habitually attended to, in the reading of every sentence. To observe them one minute and entirely disregard them the next fifteen, is worse than to have no rules at all and attend to the example of the teacher solely. And it is reasonable to think that if children were to read nothing but what they understood perfectly

in every respect ;—if they read but a few lines at a time ; and if the teacher set them a good example by reading with them constantly, and reading naturally and correctly, all these arbitrary rules might be dispensed with. For though they serve the instructor some purpose, especially the pauses, as by pointing out the grammatical construction of his sentences they assist him in understanding their meaning, yet, after all, it is the sense of the language which must dictate to every good reader the proper pauses, emphasis, cadence, and tone. It is not my intention to assert that no class of readers ought in any circumstances to read more than eight or ten lines at a lesson: this may sometimes, though I think rarely be proper. But I speak of readers in general in our common schools. With these a simple sentence of not more than one line, is often abundantly long ; and a judicious teacher might be profitably engaged in such a lesson, with a large class, for the space of half an hour, if it were advisable to protract the lesson for so long a time ; and the pupils might be interested. I know a teacher of a private school in this State, whose reputation is deservedly high, who thinks half an hour little time enough to spend on a lesson of six or eight lines in a common reading book, with twenty or thirty scholars of almost or quite adult age. But he requires them to be able to define all the words, and, by paraphrasing and transposing extensively, show that they understand their various meanings. They must also be able to spell and pronounce every word in the sentence or paragraph used as a lesson ; understand and properly apply the pauses, tones, inflections, emphasis, and cadence ; as well as understand the grammatical construction, and be able to parse the sentence. And if any idea be contained in the lesson related to geography, chronology, history, philosophy, or any of the sciences, arts, or manufactures, or the great subjects of morals and religion, he does not hesitate to enlarge on that subject, and by familiar question and answer, or *lectures*, lead their minds toward those subjects, and encourage them to pursue them. Every scholar is farther expected to be able to analyze every sentence and word, resolve compound sentences into simple ones, and also to express the sentiments or facts in his own words. This is true instruction. But what teacher can pursue a course like this with a *long* lesson ? Not one.

It will doubtless be objected that very little can be done in this way ; that children will *never* learn to read at this rate. This objection will be made, however, by those who measure

improvement by pages, or volumes, rather than by ideas, and know not but if a person skims over a certain number of pages, he has actually learned them ;—as absurd an opinion as it would be to suppose that the support furnished to the body by a meal of food, is in exact proportion to the amount of nutritious matter received into the stomach ; without considering that it is what the stomach can digest, and not that which remains undigested, that is of service in supporting life. However, those who think that *cramming* is *feeding*, the mind or body, deserve commiseration rather than reproach. Yet unhappily for the well-being of mankind and the cause of improvement, their number is large, and their influence considerable.

I anticipate another objection to this mode of instructing children, viz. that it will make them, not truly learned, but smatterers in every thing ; that they will become filled with self conceit, instead of becoming more and more humble. This objection *at first view*, appears to have great weight, and to be sanctioned by high authority. St Paul tells us that, ‘Knowledge puffeth up ;’ superficial knowledge, I suppose he means ; for it is contrary to fact to suppose that *real useful* knowledge puffs up. The wisest and best of men, in all ages have been the most truly humble, and the least conceited. The objection appears, then, to be founded on an opinion that the methods of study I have proposed, are, in their nature, directly calculated *to make* superficial scholars—to *make* smatterers. But this *opinion* is, it is believed, founded on a popular error. The fact that such men as Bacon, Locke, and Newton, by applying themselves to their favorite studies, have carried them to such a pitch of perfection as to astonish mankind by their discoveries, has sometimes been viewed in such a light as to produce this mistake. We are ready to take it for a general rule that the more closely we pursue a branch of science, to the exclusion, for the time being, of all the rest, the more we shall make progress. But I am persuaded this notion cannot be true. Science has sometimes been compared to a circle ; at others, to a chain ; but be these comparisons more or less just, such is the relation and connexion between its various branches, and such is their mutual dependence, that we cannot proceed far with one, without immediately perceiving a necessity of more knowledge of some of the others. If we go on without this knowledge which we perceive ourselves to want, we expend effort in vain ; and the farther we proceed, the greater will be the amount of lost effort in a given time. But if we stop a suf-

ficient length of time to acquire that knowledge which we perceive to be necessary, we shall be able to renew our former course by and by to better advantage ; besides, in this instance there will be no useless labor, or lost effort. It is true we shall not get so far in a particular direction as if we pursue our course constantly in one line without stopping, or turning to the right or left ; but the sum total of our progress will be much greater. Now how can a course which necessarily subjects us to the loss of so much of our labor, be on the whole productive of our own or the general good ?

All the various branches of science, natural and moral, should be studied in such a manner as to aid, illustrate, and expand each other and the mind. If it could be proved that individuals, by pursuing a favorite science to the exclusion of others, could promote either their own or the public stock of knowledge, still, I would contend that such could not possibly be the case with children. It is *elements* they want : they need not to be carried along far in any one line ; our business consists far less in teaching them, than in putting them in a way to teach themselves. What they want is the keys of science. Give them these, and show them how to unlock her treasures, and we have done much. And unless this is done, we have done very little. If these views are correct, it will be seen that smatterers cannot be made by initiating children into the various departments of science gradually as their necessities require. When our progress in knowledge is natural—when the idea which lies *next* to those we already possess is communicated to the mind, it produces the effect of enlarging our vision so as to make the fields of knowledge beyond us appear more ample, and more interesting. We see more beyond us than we saw before ; and this by comparison makes what knowledge we do already possess, appear less in amount. And shall we become conceited by seeing more and more our ignorance ? On the contrary, will it not tend to humble us ? And is that *superficial* knowledge which humbles proud man ? I do not mean to say that the more we know, the more ignorant we are in reality, for this would be a contradiction in terms ; but the more progress we make in real knowledge, the less we shall perceive we know compared with what remains to be known.

After all, it has never been proved that such geniuses as Locke and Newton, much as they have done for mankind, would not have done vastly more for themselves and others,

by cultivating the whole circle of the arts and sciences simultaneously. Like meteors, they have shot out into the expanse of knowledge ; have excited by their brilliancy our surprize and perhaps our admiration ; and justly : yet I doubt much if mankind are so much benefitted by their labors as if they had been bestowed on other subjects more, and on metaphysics and astronomy less.

Of *arithmetic*, *grammar*, and *geography*, it may be observed in general that though we have had many philosophical treatises on these subjects, yet we have had none, until very recently, adapted to the capacities of children. Authors first lay down general rules, and then proceed to those particular cases or *facts* from which their rules are deduced, and on which they are grounded and built. Is this agreeably to the order of nature ? Certainly not. The Author of nature presents his creatures with facts, rather than principles ; leaving it to them to make inferences from those facts. This great truth was most clearly pointed out by Bacon, two hundred years ago. And yet in regard to education, mankind have long neglected this discovery. Those who have written for the benefit of children, have almost universally been in the habit of beginning with generals, and proceeding to particulars. Why not follow the inductive method of Bacon ? Why not acquire as many facts as possible, and then generalize ?

Mr Colburn is the first in this country who has followed the inductive method in preparing an arithmetic. His 'First Lessons,' and Mr Fowle's 'Child's Arithmetic,' are two most excellent works. Besides these, we have now many others on a similar plan. I wish they were more extensively known and used by children. Such authors as Pike and Daboll have been studied too long. Their works were never fit for learners. There can be no possible gain, but a heavy loss in requiring children to load their memories with useless rules, or derange their mental faculties in attempting to apply a rule which they do not and cannot understand. I question the propriety of requiring them to touch a pen or pencil (in the study of *arithmetic*, I mean,) till they have gone through Fowle and Colburn. Afterward they may proceed to study some more extensive work, as Colburn's Sequel, Pike, or Daboll. Much is to be done, however, either with or without the little work of Mr Fowle, by means of sensible objects. Youth must not be hurried along too fast, of which there is constant danger. I would spend a portion of time almost every day on Fowle or Colburn.

from the time the pupil is capable of instruction, say two years of age, till he is eight years old. By this time he will be thoroughly acquainted with these two works, and prepared to enter on the more difficult works with advantage. But even without any thing more than a thorough knowledge of those two authors, every young person would possess more real practical knowledge than the study of such authors as Daboll and Pike alone would give him, if he were to study them a whole lifetime.

Had we instructors who would take special pains to speak and write correctly in all their connexion with their pupils; and had we such first books as we need, children would probably acquire a habit of speaking and constructing their sentences in strict conformity to the rules of *grammar*; which would probably supersede the necessity of studying any system. For to what purpose should we study grammar, when we already understood it to all intents and purposes? We cannot be said to be under the necessity of learning it for the sake of teaching it to others, for why should we teach others that which has proved useless to ourselves?

As things are, however, there may exist an apparent necessity of teaching English grammar as a separate science. And if it must be taught I would proceed in a manner somewhat like the following. I would commence and proceed for a time without any book; for our grammars are chiefly liable to the objections brought against our systems of arithmetic. I would request my pupils within a certain specified time, to write on a slate the *names* of all the *things* they could see or think of in the room. When they had finished this lesson, they might be directed to write the names of some other objects. In this way a class might be agreeably employed several days. It would be an excellent plan to request them to write the names of all they could recollect of the following classes of objects. Fruits, flowers, quadrupeds, fowls, fishes, trees, liquids, shrubs, cloths, knives, implements of husbandry, articles of manufacture, articles of household furniture, &c. Nor should the learner be told that these are *nouns* until several lessons have been given out. After some time I would proceed to actions. Perhaps the first lesson might be something like the following: The instructor stamps on the floor; the scholars are required to write such a word as will describe the action. One will write *stamp*, another *stamps*, and another perhaps will describe the action by the word *steps*, or *strikes*. If an attempt be only made,

they are not to be discouraged if they do not succeed quite so well at first. Other actions might then be performed, the scholars in every instance writing down some word that will, in their view, describe the action. A shrub or stick might be brought into the room ; this might be *tossed, dropped, lifted, whirled, swung, bent, bruised, split, cut, peeled, broken, sawed, burnt, &c.* After the instructor had proceeded in giving out lessons of this kind several days, his pupils might be informed that this kind of words were *verbs*. All the arbitrary definitions in the world will never give young children clear ideas of what verbs and nouns are ; but in this way they understand their use and nature perfectly. With a small share of ingenuity an instructor could invent some plan of teaching adjectives and the other parts of speech, on a similar principle. *Person, number, gender, case, &c.* should likewise all be taught on the same plan. In one stage of the learner's progress, it would be profitable to give him *verbs* to form into sentences, by the aid of such nouns or pronouns as he could recollect. Lists of nouns, adjectives, &c. might also be given out, to combine with other words and form sentences.

It has been observed that children cannot get clear ideas of the nature of the parts of speech from arbitrary rules or definitions. This assertion may surprise some persons who have not had leisure to think on the subject ; but it is true. I have had some experience in this matter, and do not hesitate to say that it is entirely useless to commit any rules, definitions, or explanations of our English grammar books to memory. That such books aid an instructor, I have no doubt. That they may be useful to advanced scholars is probable. But that they are entirely useless to young persons—to beginners, let their age be what it may,—I am confident. There is, for example, not a solitary sentence in Murray's Abridgment of his English Grammar under the head of orthography and etymology, that ought to be committed to memory,—I mean as a separate exercise ; for this is what is generally understood by the phrase *commit to memory*. Whether any thing in prosody or syntax should be committed to memory, I do not know. Let a plan similar to the one suggested above be adopted in our schools, and children will be led insensibly to form their own rules, definitions, &c. They will come to them as a result. And these results will be to all intents and purposes, correct.

How painful is the reflection that the days, and months, and years, which have been devoted to committing grammar to

memory without making any practical application of it at the same time, have been lost and worse than lost. For nothing has done more towards disgusting children with the study of grammar, and, from association, study in general, than this. And an instructor who has never tried a rational method, would, upon trial, be surprised at the difference. Instead of yawning, and wringing, and dreaming, all is interest. The scholar perceives that he makes progress—and finds himself capable of understanding his subject. His countenance—his words—his actions, show that he is pleased with himself, and with his employment.

In teaching *geography*, why should we begin with *astronomy*? Why begin at the heavens, and then come down to the earth? Or at the remotest parts of the earth, and gradually approach our own dwellings? I say *approach*; for we never reach them, we wander forever. In the vicinity of my residence not one in fifty that studies geography, understands much about his own State, or county; much less of his own town. Now if this part of the State be a fair specimen of the rest, of what use is their geography? There must certainly be a radical error somewhere. For the geography of our own town and the towns adjacent, is of vastly more consequence to us than the same extent of country in other parts of the universe. Must not there be a fault then in the popular method of teaching this useful branch of science?

To proceed gradually from the known to the unknown, must be the true method of study—the order of nature. And it will be our highest wisdom to avail ourselves as much as possible of sensible objects. They are more necessary in geography than grammar, though useful in both. Mrs Willard's *Geography for beginners*, is said to be constructed on this great principle; I mean that of proceeding from the known to the unknown. Yet I think much is to be done before a scholar is prepared for that work. In that, as well as other works, we talk about distances, heights, &c., of which children have no definite ideas, nor is it possible they should have. I think the first lesson in geography, after a child has acquired some knowledge of numbers, should be to give him a clear and distinct idea of an *inch*; for perhaps it is unnecessary to descend to tenths or barley corns. When he was able to judge of this distance pretty well, he should be taught to repeat the distance until he had an adequate idea of an inch repeated twelve times. By this time he might be told that twelve inches make a *foot*; six

inches half a foot, &c. Then the foot might be doubled and trebled ; this being done, he should be informed that three feet make a *yard*. Thus we might proceed gradually from step to step, till our pupil could understand the extent of a rod, a rood, a mile, a league, or a degree. The practice of talking to children about *rods* or *miles*, while they have not the most distant conceptions of an *inch* or a *foot*, is bad indeed ; and would not be tolerated were one tenth of its evils understood. But the experiments now going on in education, must speedily convince the most sceptical of the inestimable value of the inductive system, as well as of the paralyzing and depressing tendency which our old systems have had on the human mind.

I have amused myself and satisfied my mind of the superiority of the inductive system in teaching geography, by experiments on little children who have sometimes called at my room ; while they were ignorant of my ultimate object, and only felt that they made me and themselves happy by their prattle. Having satisfied myself that they knew nothing about an inch except by name, I have usually commenced by showing them some little object which I had about me, as a pin, or something about an inch in length, and after some familiar conversation about it which was calculated to arrest their attention, have told them it was an inch long. Now, I would say, you have learned what an inch is, have you not ? They would usually seem pleased. They were then shown other objects of the same length, but differing in breadth, thickness, shape, color, &c. and made to understand that these too were an inch in length. Their faculty of judging was then apparently exercised a little, by placing before them objects either of half an inch or an inch in length, and asking them to guess how long they were. By placing two objects each an inch long in a line, I would now show them how much two inches was, three inches, &c. Before I proceeded to repeat the inch oftener than three or four times, I used to show them my penknife, the handle of which was marked into a three inch rule, other penknives, keys, pencils, crayons, combs, &c. and require them to judge of their various lengths ; thus proceeding gradually and carefully till they became able to judge, almost as accurately as myself, of any distance not exceeding twelve inches. When I had proceeded to so far as to exercise their judgments on objects twelve inches long, I would tell them this was a *foot*. In this way I found no difficulty in making them sensible of the progress they had made ; and every step of this progress seemed to be attended

by its own reward. I have repeatedly pursued this course to the length of a yard at a single conversation, and never found the child fatigued with the process. Though to avoid the possibility of tiring their minds, I would not advise others to proceed so far at once. It is of the utmost importance here, as well as in all the instructions we give young children, that they be pleased ; that they do not pass from one thing to another till they perfectly understand their subject so far as they have gone, at least till they understand it as far as they can without other ideas ; and that they themselves perceive the progress they are making. If we knew the human mind sufficiently well, and how to adapt ourselves and our lessons to the capacities of the infant mind in all circumstances and conditions, I have not the least doubt but we might so inculcate every thing we wished, as to engage the attention, and enlarge the minds of the most obtuse. It must surely be so ; it would be an obvious impeachment of the wisdom and goodness of the Deity to believe and declare otherwise. The acquisition of new ideas must, and it *does*, make every rational being happier ; better pleased with himself, and better pleased with those around him. And these good feelings, added to that fresh desire to know more which will naturally be enkindled, will urge the learner forward in the field of knowledge with a greater or less rapidity. If some appear to be exceptions to the truth of these remarks, it is either owing to our ignorance of the human mind, and an inability to trace effects to their intimate causes ; or to some unseen agent which operates to counteract our efforts.

No child should be permitted to enter on the more direct studies of geography till he has gone through a set of exercises, similar in principle to the above ; but much more diversified and extended. He should be taken abroad to see brooks and rivers, hills and mountains, shrubs and trees, and be required to judge of the breadth and height of these and various other objects. At the same time he should be instructed in the art of drawing maps, beginning with the map of the room in which he is accustomed to dwell, and proceeding gradually to delineate the house, garden, 'homelot,' orchard, &c. with which he is familiarly acquainted. Thence he might extend his survey of objects to the neighbourhood or village, and ultimately be able to draw a tolerably correct map of the town where he resides. As the travels of very young children must necessarily (at least in the present state of human society,) be limited to a very narrow tract of country, it would be impossible to give

them accurate ideas of all the numerous divisions of land and water by ocular demonstration. To supply the want of these, an ingenious instructor can show them continents and seas, and lakes and islands, in *miniature*; without going out of the school room. Nay, there is scarce a natural or artificial curiosity in the known world, but what might be ingeniously and naturally represented in suitable and accurate proportions. I hesitate not to predict that all these objects in miniature, will be ultimately deemed as necessary in every school room, as books, slates, pencils, &c. They will not supersede the necessity, or at least the utility of travelling; children ought, at the same time, to travel in company with their parents or instructors as much as possible.

Nothing is here said which can be fairly construed into a want of respect for the labors of the many able geographers of our day. It is to prepare the scholar to relish and digest the facts contained in the valuable works of those authors, and not to supersede their use. I must, however, dissent from the opinion pretty generally received, that the *plan* of Woodbridge and Willard is adapted to the wants and capacities of very young children. They are not prepared to generalize, until they become more acquainted with particulars than scholars usually can be who enter at once upon that ingenious work. Yet even where this is the first book used in geography, much advantage will be derived from the preparatory steps which have been recommended in this essay: nor will those who reflect be willing, in any possible case, to dispense with the spirit of a process so manifestly adapted to the real wants of the learner.

ART. II.—*Aids to Developement, or Mental and Moral Instruction. Exemplified in Conversations between a Mother and her Children.* London. R. B. Seeley & Co. 1829. 2 vols. 12mo. pp. 309 and 262.

THIS work is on the general plan of the Mother's Book of Pestalozzi. Its main object is to suggest methods of cultivation, which tend to develop early and in just proportion the faculties of the whole infant being; mingling bodily activity,

and a careful moral nurture, with all the exercises of intellect. The book is divided into successive 'conversations,' supposed to have taken place in an ordinary and familiar way, but serving every valuable purpose of regular lessons on various subjects. The mother leads the conversation in a natural but skilful and truly philosophical manner, so as to elicit thought and instruction from the young mind itself, and thus to give depth and reality to the mental character ; while the insensible and cheerful progress of the learner, is felt to be in true harmony with the happy nature and condition of childhood.

The work has been but recently received, and we have not had time for a full examination of it. The part devoted to religious instruction would be read probably with very different impressions by different persons. But of this we do not consider it our province to speak. Of other parts of the work our readers will perhaps be interested in the following specimen. At present we have not sufficient time or space for further notice ; but our intention is to resume the examination of the book at a future opportunity, as it seems to be rich in materials for the various purposes of early education. The following is the 'introductory conversation.'

'My dear Mrs Eustace, said Mrs Sandhurst, as she entered the room, I am glad to find you alone, and, I hope, at leisure to spare me a little of your valuable time. I have long wished to converse with you on the subject of education, in which I feel deeply interested ; but in the practical application of which, I find so many difficulties meeting me at every step, that I have almost determined to give up the plan of educating my children myself ; and I think of sending them to school.

'*Mrs Eustace.* I feel with you, that there are great, though, I think, not insuperable difficulties, in the way of a mother's educating her own children ; but it is a plan so evidently pointed out by God himself, that it should not be hastily relinquished. The influence of a mother over the affections of her child during the years of infancy, enables her not only to cultivate its mind, but to give its heart those impressions, which she may humbly hope it will never lose, in after intercourse with the world ; and which, through the influence of the Holy Spirit, she may firmly believe may enable it to overcome the various temptations, by which it will be assailed.

'*Mrs Sandhurst.* I feel all you say to be true, and only wish that I could be as successful as you have been, in bringing up your children. May I ask what are their ages ? I do not exactly remember.

' Mrs Eustace. Fanny is fourteen, Albert, eleven, Lucy, eight, and Edward, three years old.

' Mrs Sandhurst. Mine are rather older than yours, but they seem to have so rooted a dislike to application, that I am completely worn out with the exertion of teaching them.

' Mrs Eustace. You will pardon me, my friend, if I venture to remark, that if you complain of being fatigued by instructing your children, it is not wonderful that they should participate in the same feeling. But perhaps you are too anxious to *teach* them instead of drawing them out to teach themselves?

' Mrs Sandhurst. I do not comprehend your meaning. I have taught them exactly in the same manner as I was taught myself; nay, I have employed the same books, that I might make no mistake.

' Mrs Eustace. What will you say to me, then, when I tell you that I use hardly any books, especially with the younger children?

' Mrs Sandhurst. No books, Mrs Eustace! but surely you teach them grammar, arithmetic, spelling, and reading?

' Mrs Eustace. I do, but not at all in the manner in which they are usually taught.

' Mrs Sandhurst. I have used small Catechisms on every branch of learning, considering that knowledge presented in so very clear and condensed a form, would be much more easily retained than in any other way.

' Mrs Eustace. I entirely differ from you there. Can any thing be so uninteresting to a child as this mode of instruction; in which the bare facts are brought before him, stripped of all that could make them pleasing? I remember too well the disgust I myself felt—when obliged to commit long tasks to memory, scarcely a word of which I understood,—to impose the same burden on others.

' Mrs Sandhurst. Do you not think, then, that the memory ought to be early cultivated?

' Mrs Eustace. I do, but not as a distinct faculty. Whatever is thoroughly understood will be easily retained; but whatever is learned merely by rote, will be as easily forgotten; and if it were not forgotten, it could never be of any use. I never allow my children to learn any thing by heart, which I am not first assured, by questioning them, that they fully understand. If they acquire in the course of a whole day's application, but one clear idea, something is gained; whereas, of what avail is it to them to have committed pages to memory, to which they attach no meaning, or at most only a confused, and frequently a false one? The teacher has at first little to do, but to draw from the child that which he can himself observe, by attending to what passes in his own mind, as well as by coming in contact with sensible objects.

‘*Mrs Sandhurst.* Indeed your theory appears to me scarcely intelligible, because I have always thought, that the first duty which I owed to every child when it was old enough, was to teach it to read; and this I have accomplished with infinite pains and trouble.

‘*Mrs Eustace.* I would not shock your prejudices by a harsh declaration of my own sentiments; but allow me to say, that I think reading is quite misplaced, by being allowed so complete a precedence in the order of instruction. Words are but the *signs* of *things*, of actions, or of feelings; and of what value is the *sign*, till the *thing* is understood, which it is intended to express.

‘*Mrs Sandhurst.* I agree with you, but until a child can read, how is it possible to instruct him in any thing?

‘*Mrs Eustace.* Every thing within its reach or its view, may be made a source of instruction. Take, for example, any part of its body, an arm, a hand, or any of its actions; or any thing in the room. Here is a piece of stick, this will afford a long lesson. Its breadth, length, thickness, weight, color, form, properties, uses, origin, growth, &c. upon all these the child’s observation may be directed, and they may become sources of improvement. By these simple methods a taste for inquiry is excited, the child will be led to reflect on its own powers and capacities; and its faculties will be developed more rapidly than you would at first conceive to be possible.

‘*Mrs Sandhurst.* This is all very well for a clever mother, but I should despair of finding a sufficient variety of subjects to instruct my children upon this plan.

‘*Mrs Eustace.* Believe me, you are quite mistaken. You need not fear that you will want materials, the mind of a child once brought into active operation will furnish them for you, and you will soon have enough to do in answering the questions which your young pupil will propose to you. Children will often make inquiries, to which their parents will find it no easy task to reply satisfactorily. And by this mode of treatment you will prevent them from degenerating into those little sensual beings, who are continually disgusting you with their appetites and passions;—while, on the other hand, they will have endless sources of pleasure and improvement opened to them.

‘*Mrs Sandhurst.* I should like to be a learner in your school, for I feel my own need of instruction daily. Neither pains nor expense were spared in my education, and yet I find that I never thoroughly understood any thing that I was taught.

‘*Mrs Eustace.* Nothing would give me more pleasure than to point out to you such plans, as might enable you to be at once the mother, friend, and teacher of your children. It is one of the excellencies of the system which I advocate, that we learn

with our little ones; they become unconsciously our instructors, by continually furnishing us with fresh materials for thought and reflection.

‘*Mrs Sandhurst.* But at what age do you think a child capable of being taught?

‘*Mrs Eustace.* Much sooner than is generally believed; a child can hardly be said to be incapable of receiving impressions, from its very birth. How soon does it observe the expression of its mother’s countenance, and give evidence that it is the subject of painful and pleasing sensations, from external objects! Light, color, and form, are the first sources of these impressions, and, gradually, thought is exercised upon them. After this time, the child begins to feel its own power of making impressions upon these external objects; and at a still later period it is conscious of its own mental existence, and becomes a reasoning being.

‘*Mrs Sandhurst.* Is it then to its reasoning powers that you would principally direct your attention?

‘*Mrs Eustace.* Far from it, the main point at which we must aim, is to draw forth its affections, and thus to form a proper basis, on which to ground intellectual culture. Without keeping this constantly in view you may ultimately make its knowledge an obstacle in its way to heaven.

‘*Mrs Sandhurst.* In order to explain your method more clearly to me, may I ask you to send for one of your children? I shall then have a practical illustration of your mode of teaching.

‘*Mrs Eustace.* With pleasure; you shall see my youngest boy directly. I will fetch him.

‘*Mrs Eustace* soon returned; bringing little Edward in her arms.

‘Now, Edward, said she, run and fetch mamma your stool. Show me what you can do with it?

‘*Edward.* I can set it down, mamma, and lift it up.

‘*Mrs Eustace.* So you can! Do something more with it.

‘*Edward.* Look mamma, I can push it away, and then pull it back again.

‘*Mrs Eustace.* And can you do any thing else with it?

‘*Edward.* O yes, drag it after me, and then turn it over.

‘*Mrs Eustace.* Well done Edward, now think of something more to do with it.

‘*Edward.* May I throw it, mamma?

‘*Mrs Eustace.* No, Edward, something more gentle than throwing.

‘*Edward.* Oh! see how it goes along the floor.

‘*Mrs Eustace.* What do you call that?

‘*Edward.* I don’t know, mamma.

‘*Mrs Eustace.* Sliding it, my dear. What are you doing with it now?

' *Edward*. Carrying it in my right hand. I will carry it in my left, and then in both hands, mamma.

' *Mrs Eustace*. Can you put it no where else but in your hands, Edward?

' *Edward*. Yes, mamma, I can carry it, like the milk-woman, on my head.

' *Mrs Eustace*. And when you have done that, what is the opposite to your head?

' *Edward*. I know, mamma; my feet; I can put it under my feet.

' *Mrs Eustace*. And what do you do when you have put it under your feet?

' *Edward*. I stand upon it, mamma, and I can put one foot on it, and then the other foot on it.

' *Mrs Eustace*. Can you place it in any other way than it is in now?

' *Edward*. I will try, mamma. I can turn it on its side, and on its end.

' *Mrs Eustace*. And how are you holding it now, my dear?

' *Edward*. Sloping, mamma. And now I am putting it against your chair.

' *Mrs Eustace*. That is called *leaning* it, my dear. Tell me what you would like best of all to do with it?

' *Edward*. I should like to sit on it, close by you, mamma. May I?

' *Mrs Eustace*. Yes, my love, do so.

' *Mrs Sandhurst*. I admire this lesson exceedingly.

' *Mrs Eustace*. You see clearly that the child has comprehended the meaning of the *terms*, by his having performed the actions they express; and though he knows nothing of the *name* of an "active verb," yet he knows the *thing*, which is far more important.

' *Mrs Sandhurst*. Would it not have been as well if you had told him to lift the stool, or do any thing else with it?

' *Mrs Eustace*. By no means;—I should merely then have him go through a set of exercises; but in asking him, What can you do with it? I have called forth reflection. A child quickly acquires language for himself in the daily intercourse of life; but if, after he has performed an action, he wants words by which to express it, you may then give them to him.

' *Mrs Sandhurst*. I understand the distinction, and see the force of it. But how would you proceed in making him acquainted with the other parts of speech?

' *Mrs Eustace*. Not very systematically perhaps; but shall we try the prepositions, without telling him that long word, which has frightened so many children?

' *Mrs Sandhurst*. Pray do.

‘ *Mrs. Eustace.* Now, Edward, jump up, and bring your stool to me. Where are you holding it ?

‘ *Edward.* *Between* my hands, mamma.

‘ *Mamma.* Put your hands somewhere else, and tell me where they are.

‘ *Edward.* They are *over* it now, mamma.

Mrs Eustace. Change their place again, and tell me where they are.

‘ *Edward.* *Under* it, mamma.

‘ *Mrs Eustace.* Can you put them in any other way, my dear ?

‘ *Edward.* Yes, *behind* it, and *before* it, mamma.

‘ *Mrs Eustace.* And where are they now, Edward ?

‘ *Edward.* *Near* it, mamma ; and now they are *far* from it.

‘ *Mrs Eustace.* Right, my love ; that will do.

‘ *Mrs Sandhurst.* Your plan of teaching grammar makes that an amusement, which is generally the most irksome occupation.

‘ *Mrs Eustace.* Yes, I find it does so. I need scarcely point out to you how easily you may teach the adverbs in the same mode, by connecting them with an action done *quickly*, *slowly*, *gently*, *suddenly*, *violently*, and so on. And as to the nice distinctions in grammar, they are certainly quite beyond the comprehension of children, and therefore no good end is effected by burdening their memories with them.

‘ *Mrs Sandhurst.* But you would not set aside reading ; and my difficulty on this point returns. When would you teach it, and how ?

‘ *Mrs Eustace.* With regard to reading and every thing else, no invariable rule can be given. Much depends on the child itself ; some will learn almost insensibly, while they are very young, and others will be three or four years old, before they seem to have any notion about the combination of letters into syllables and words. I am never at all solicitous on the subject, and should prefer waiting many years, rather than force it upon them as a task. If the mind be enlarged, and led to think, they will after a time desire to read as a medium of acquiring further knowledge. I have generally taught reading and spelling at the same time, by printing words for them on paper, and making these into short easy sentences, which they themselves dictated to me ; and also by letting them have some alphabets of single letters on card, which they formed into words. Another plan I have adopted, is that of showing them the pictures of animals, with the names printed under them, which the children have learned to spell for the purpose of finding out what to call them.

‘ *Mrs Sandhurst.* And have you found this sufficient, without requiring them daily to spell a certain quantity from a book ?

‘ *Mrs Eustace.* Quite so, and much more effectual.

' Mrs Sandhurst. You said that you did not teach systematically ; will not this produce desultory habits in your pupils ?

' Mrs Eustace. I am glad that you asked me that question, because I see that you have misunderstood me. I meant simply, by saying " not *systematically*," not according to the systems usually laid down. Methodical teaching is of the first importance. But there is another point in education which cannot be too much insisted on, and which is very generally overlooked, and that is, an orderly developement of the faculties.

' Mrs Sandhurst. I do not quite understand you.

' Mrs Eustace. I mean, that the order designed by nature should be strictly attended to here. Instead of which, how common it is to see one portion of the mind cultivated, whilst the rest is allowed to lay waste ; whereas if this order were observed, what different results would be discoverable, and what an harmonious balance would be presented between the various mental powers.

' Mrs Sandhurst. I thank you for this explanation, to the truth of which I fully agree. I have found great difficulty on another subject, on which I should like to have your opinion, and that is with regard to the amusements of little children. I am constantly buying them new toys, and contriving ways of entertaining them, yet I have generally been disappointed in the result.

' Mrs Eustace. We greatly err in supposing that children need so many sources of amusement as are provided for them by the mistaken kindness of mothers and relations. You cannot but have remarked, how long a child will amuse itself, if left alone, with the simplest object. But if the passion for novelty is excited by supplying it with fresh sources of gratification, he becomes restless, dissatisfied, uneasy, and irritable.

' Mrs Sandhurst. I admit the justice of your remark ; but would you give your children no toys ?

' Mrs Eustace. There are a few of which I find they are never weary, such as balls and humming tops, but especially some hundreds of little wooden bricks ; these they can place in every variety of form, and they are an endless source of amusement and instruction. It is a great trial to a child's temper, to put those things in its power, which you must be continually reminding it not to break or injure.

' Mrs Sandhurst. Certainly I must try your plan at once in my nursery. But to recur to our former subject, I think I shall find much more difficulty in adopting your system with the elder than with the younger children ; how can you vary your lessons for them ?

' Mrs Eustace. This room alone would last me many months, if we were to go into all the minutiae of its parts. The rudiments of arithmetic and geometry may be easily taught with no

other instruments, than the doors and windows : let the children observe the number of panes and pannels; and multiply or divide by—or subtract the one from the other ; double and triple each, or both combined ; then if you vary this exercise in every different way, you will always find something new. Let them find the different lines and forms of every thing about them, and compare one object with another ; and after you have once pointed out to them the different sorts of figures and angles, by imitating and combining these, they learn the rudiments of drawing and geometry.

‘ *Mrs Sandhurst.* Would you then advise me at once to throw aside all the books I have been accustomed to use with my children ?

‘ *Mrs Eustace.* By no means could I wish you to take such a step ; so sudden a revolution might prove as injurious in your little community as it has done in many large ones. You might also find some difficulty yourself, in proceeding thus, until you have by reflection prepared your own mind for it ; but you may gradually bring about the change you desire. Make your lessons less dry by introducing conversation upon them, and asking familiar questions as you proceed ; lead the children to bring illustrations from what they have themselves seen, heard, or remarked, and vary your mode of instruction as much as possible. Never go on with any thing till weariness is produced, nor persevere in any thing which has hitherto caused nothing but uneasiness, for if it has already occasioned disgust, you will in vain endeavour to make it interesting afterwards.

‘ *Mrs Sandhurst.* I see the force of your observations, but perhaps you would not think it necessary for me to relinquish at all some of my present plans. I have been accustomed to set my children to learn by heart little poems which are written expressly for this purpose, do you object to this ?

‘ *Mrs Eustace.* I confess I do, but on a different ground to that of which we before spoke. What is generally called poetry for children, in order to be made comprehensible to them, is brought down to so low a standard, that all which ought to be distinguishing in poetry, is necessarily lost. Instead, therefore, of their ideas being elevated by it, and their imaginations cultivated, the contrary effect is produced ; and for these reasons I prefer not introducing poetry to my children, until they can understand and relish the higher kinds of it.

‘ *Mrs Sandhurst.* Then you would banish poetry altogether ?

‘ *Mrs Eustace.* Oh no ! a judicious teacher may select passages from our greatest poets to read with her pupils, into the meaning and spirit of which they will enter at an earlier age than you would at first suppose probable.

‘*Mrs Sandhurst.* Do you adopt the usual method of giving rewards in order to stimulate to exertion? I have found it very useful, but I begin to suspect I may be wrong even here.

‘*Mrs Eustace.* And I think your suspicions are well founded. An action is right or wrong according to the motive which has prompted it; and from what motive does that exertion proceed which has reward for its aim?

‘*Mrs Sandhurst.* From a selfish one certainly.

‘*Mrs Eustace.* Undoubtedly it does, and can we be too careful in avoiding every thing which is likely to foster this basest, and most prevailing tendency of our nature? Besides, it is impossible for us to judge how far reward is fairly earned. One child whose memory is tenacious, and whose powers are quick, will with very little application surpass another of less ability, whose efforts have been much greater, and whose whole attention has been bent towards the accomplishment of the end in view. Yet the latter goes unrewarded, and is depressed by the conscious injustice he has experienced, whilst the former is elated by unmerited reward. Emulation produces even worse effects, because the mind of the successful competitor is filled with vanity, and that of his unsuccessful rival with vexation, envy, and jealousy. Application excited by such means is not likely to become a steady principle, but will cease when the stimulus they supplied is withdrawn.

‘*Mrs Sandhurst.* I think your reasoning is correct, though I have never seen the subject in this light before.

‘*Mrs Eustace.* No, it is too generally overlooked. We are naturally disposed to indolence of mind, and by following in the beaten track, we comfort ourselves with the reflection, that it is not necessary to stop and ask at each step, Whither does this lead?’

ART. III.—*The Constitution of Man, considered in relation to External Objects.* By GEORGE COMBE. Boston. Carter & Hendee. 1829. 12mo. pp. 310.

‘If it be said, that the cure of men’s minds belongeth to sacred divinity, it is most true; but yet moral philosophy may be preferred unto her as a wise servant and humble handmaid. For as the Psalm saith, that the eyes of the handmaid look perpetually towards the mistress, and yet, no doubt many things

are left to the discretion of the handmaid to discern, of the mistress's will ; so ought moral philosophy to give a constant attention to the doctrines of divinity, and yet so as it may yield of herself, within due limits, many things sound and profitable.

‘ This part, therefore, because of the excellency thereof, I cannot but find exceeding strange that it is not reduced to written inquiry ; the rather because it consisteth of much matter, wherein both speech and action is often conversant ; and such wherein the common talk of men, (which is rare, but yet cometh sometimes to pass,) is wiser than their books. It is reasonable, therefore, that we propound it in the more particularity, both for the worthiness, and because we may acquit ourselves for reporting it deficient ; which seemeth almost incredible, and is otherwise conceived and presupposed by those themselves that have written. We will therefore enumerate some heads or points thereof, that it may appear the better what it is, and whether it be extant.

‘ First, therefore, in this, as in all things which are practical, we ought to cast up our account, what is in our power, and what is not ; for the one may be dealt with by the way of alteration, but the other by way of application only. The husbandman cannot command, neither the nature of the earth nor the seasons of the weather ; no more can the physician the constitution of the patient, nor the variety of accidents ; so in the culture and cure of the mind of man, two things are without our command, points of nature and points of fortune, for to the basis of the one, and the conditions of the other, our work is limited and tied. In these things, therefore, it is left unto us to proceed by application.

“ *Vicenda est omnia fortuna ferendo :*”

(All fortune is to be overcome by patience :)

‘ And so likewise,

“ *Vincenda est omnis natura ferendo :*”

(All nature is to be overcome by patience.)

‘ But when we speak of suffering, we do not speak of a dull and neglected suffering, but of a wise and industrious suffering, which draweth and contriveth use and advantage out of that which seemeth adverse and contrary ; which is that properly which we call accommodating or applying. Now the wisdom of application resteth principally in the exact and distinct knowledge of the precedent state or disposition, unto which we do apply : for we cannot fit a garment, except we first take measure of the body.

‘So then the first article of this knowledge is, to set down sound and true distributions and descriptions of the several characters and tempers of men’s natures and dispositions ; especially having regard to those differences which are most radical in being the fountains and causes of the rest, or most frequent in concurrence or commixture ; wherein it is not the handling of a few of them in passage, the better to describe the mediocrities of virtues, that can satisfy this intention. For if it deserve to be considered, “that there are minds proportioned to great matters and others to small,” (which Aristotle handleth or ought to have handled, by the name of magnanimity ;) doth it not deserve as well to be considered, “that there are minds proportioned to intend many matters and others to few ?” So that some can divide themselves ; others can perchance do exactly well, but it must be but in few things at once : and so there cometh to be a narrowness of mind, as well as pusillanimity. And again, “that some minds are proportioned to that which may be dispatched at once, or within a short return of time ; others to that which begins afar off, and is to be won with length of pursuit :”

“Jam tum tenditque fovetque :”

(Even then begun to destine and cherish.)

‘So that there may be fitly said to be a longanimity, which is commonly ascribed to God as a magnanimity. So further deserved it to be considered by Aristotle ; “that there is a disposition in conversation, (supposing it in things which do in no sort touch or concern a man’s self,) to soothe and please ; and a disposition contrary to contradict and cross :” and deserveth it not much better to be considered, that there is a disposition not in conversation or talk, but in matter of more serious nature, (and supposing still in things merely indifferent,) to take pleasure in the good of another ; and a disposition contrariwise, to take distaste at the good of another ? which is that, properly, which we call good-nature or ill-nature, benignity or malignity ; and therefore *I cannot sufficiently marvel that this part of knowledge, touching the several characters of natures and dispositions, should be omitted both in morality and policy, considering it is of so great ministry and suppeditation to them both.* A man shall find in the traditions of astrology, some pretty and apt divisions of men’s natures, according to the predominances of the planets, lovers of quiet, lovers of action, lovers of victory, lovers of honor, lovers of pleasure, lovers of arts, lovers of change, and so forth. A man shall find in the wisest sort of these relations which the Italians make touching conclaves,

the natures of the several cardinals handsomely and lively painted forth : a man shall meet with, in every day's conference, the denominations of sensitive, dry, formal, real, humorous, certain, "*huomo di prima impressione, huomo di ultima impressione,*" (a man of the first impression, a man of the last impression,) and the like : and yet nevertheless this kind of observation wandereth in words, but is not fixed in inquiry, for the distinctions are found many of them, but we conclude no precepts upon them : wherein our fault is the greater, because *both history, poesy, and daily experience are as goodly fields where these observations grow : whereof we make a few posies to hold in our hands, but no man bringeth them to the confectionary, that receipts might be made of them for the use of life.*

' Of much like kind are those impressions of nature, which are imposed upon the mind by the sex, by the age, by the region, by health and sickness, by beauty and deformity and the like, which are inherent, and not external ; and again, those which are caused by external fortune ; as sovereignty, nobility, obscure birth, riches, want, magistracy, privateness, prosperity adversity, constant fortune, variable fortune, rising "*per saltum,*" (suddenly,) "*per gradus,*" (gradually,) and the like. And therefore we see that Plautus maketh it a wonder to see an old man beneficent "*benignitas hujus ut adolescentuli est,*" (he has this beneficence as being a young man.) St. Paul concludeth, that severity of discipline was to be used to the Cretans, "*Increpa eos dure,*" (rebuke them sharply,) upon the disposition of their country, "*Cretenses semper mendaces, malæ bestiæ, ventres segnis,*" (the Cretans are always liars, evil beasts, slow bellies.) Sallust noteth, that it is usual with kings to desire contradictories : "*Sed plerumque regiæ voluntates, ut vehementes sunt, sic mobiles, saepeque ipsæ sibi adversæ,*" (but for the most part the minds of princes, as they are impetuous, so are they changeable, and often self-contradictory.) Tacitus, how rarely raising of the fortune mendeth the disposition. "*Solus Vespasianus mutatus in melius,*" (Vespasian alone was changed for the better by elevation of power.) Pindarus maketh an observation that great and sudden fortune for the most part debaseth men. "*Qui magnam felicitatem concipere non, possunt,*" (who cannot digest great good fortune.) So the Psalm sheweth it is more easy to keep a measure in the enjoying of fortune, than in the increase of fortune : "*Divitiæ si affluent, nolite cor apponere,*" (if riches increase, set not your heart upon them.) These observations and the like I deny

not but are touched a little by Aristotle, as in passage, in his Rhetorics, and are handled in some scattered discourses : *but they were never incorporated into moral philosophy, to which they do essentially appertain ; as the knowledge of the diversity of ground and moulds doth to agriculture, and the knowledge of the diversity of complexions and constitutions doth to the physicians, except we mean to follow the indiscretion of empirics, which minister the same medicine to all patients.*'

It is unnecessary perhaps to say that these are the sentiments of Bacon. The language is sufficiently characteristic to indicate the author. But, in again inviting the attention of our readers to the work mentioned at the head of this article, we could scarcely, perhaps, afford them so great a pleasure as to prefix to a few farther observations on the subject of Mr Combe's book, the opinions of him, whose glory it is, 'unassisted by any mortal, to have steadfastly entered the true path which was absolutely untrod before, and to have held out a light to posterity by a torch set up in the obscurity of philosophy.'

In a former article grounded on the work of Mr Combe, we took occasion to recommend it as an instructive volume on the subject of education ; and our object at present is chiefly to lay before those of our readers who may not yet have perused it, such extracts as may serve to give an idea of its contents. A correct view of the capacities of individual constitution, and the propensities of native disposition, was, (as may be perceived in the full quotation above,) regarded by Lord Bacon as indispensable to success in mental cultivation. Important, however, as this subject was in his estimation, it was one which, in his wide but discerning survey of human knowledge, was 'noted as deficient.'

Whether in the modern science of phrenology we are furnished with the means of supplying this deficiency we cannot pretend to decide. But of one thing we feel assured, that this department of investigation is at present yielding facts which, whatever place they may be made to assume in theories and systems, are fraught with important instruction to all who exert an influence on the formation of character. We hope, therefore, that no one will be deterred from an attentive perusal of the work now before us, by the peculiarities of nomenclature in which its author has perhaps too freely indulged. The conclusions to which a reflecting mind may be led by the suggestions of this writer, form an intellectual and moral eminence from which the reader may contemplate new and boundless

scenes of improvement, inviting equally the efforts of self cultivation, and an enlightened and faithful endeavour to aid the progress of others.

The following passage, which is full of the eloquence of thought, gives an interesting view of the advantages arising from the circumstance that knowledge is an acquisition and not an endowment.

‘ Supposing the human faculties to have received their present constitution, two arrangements may be fancied as instituted for the gratification of these powers. 1st. Infusing into them at birth *intuitive knowledge* of every object which they are fitted ever to comprehend; or, 2dly. Constituting them only as *capacities* for gaining knowledge by exercise and application, and surrounding them with objects bearing such relations towards them, that, when observed and attended to, they shall afford them high gratification; and, when unobserved and neglected, they shall occasion them uneasiness and pain; and the question occurs, Which mode would be most conducive to enjoyment? The general opinion will be in favor of the first; but the second appears to me to be preferable. If the first meal we had eaten had forever prevented the recurrence of hunger, it is obvious that all the pleasures of satisfying a healthy appetite would have been then at an end; so that this apparent bounty would have greatly abridged our enjoyment. In like manner, if, our faculties being constituted as at present, intuitive knowledge had been communicated to us, so that, when an hour old, we should have been thoroughly acquainted with every object, quality, and relation that we could ever comprehend, all provision for the sustained activity of many of our faculties would have been done away with. When wealth is acquired, the miser’s pleasure in it is diminished. He grasps after *more* with increasing avidity. He is supposed irrational in doing so; but he obeys the instinct of his nature. What he possesses no longer satisfies *Acquisitiveness*; it is like food in the stomach, which gave pleasure in eating, and would give pain were it withdrawn, but which, when there, is attended with little positive sensation. The Miser’s pleasure arises from the *active state* of *Acquisitiveness*, and only the pursuit and obtaining of *new treasures* can *maintain this state*. The same law is exemplified in the case of Love of Approbation. The gratification which it affords depends on its *active state*, and hence the necessity for *new incense*, and *higher mounting* in the scale of ambition, is constantly experienced by its victims. Napoleon, in exile, said, “Let us live upon the past:” but he found this impossible; his predominating desires originated in Ambition and Self-esteem; and the past did not stimulate these powers, or maintain them in constant activity. In like manner,

no musician, artist, poet, or philosopher, would reckon himself happy, however extensive his attainments, if informed, Now you must stop, and live upon the past ; and the reason is still the same. New ideas, and new emotions, best excite and maintain in activity the faculties of the mind, and activity is essential to enjoyment. If these views be correct, the consequences of imbuing the mind with the intuitive knowledge, would not have been unquestionably beneficial. The limits of our acquirements would have been reached ; our first step would have been our last ; every object would have become old and familiar ; Hope would have had no object of expectation ; Cautiousness no object of fear ; Wonder no gratification in novelty ; monotony, insipidity, and mental satiety, would apparently have been the lot of man.

‘ According to the view now advanced, creation, in its present form, is more wisely and benevolently adapted to our constitution than if intuitive instruction had been showered on the mind at birth. By the actual arrangement, numerous noble faculties are bestowed ; their objects are presented to them ; these objects are naturally endowed with qualities fitted to benefit and delight us, when their uses and proper applications are discovered, and to injure and punish us for our ignorance, when their properties are misunderstood or misapplied ; but we are left to find out all these qualities and relations by the exercise of the faculties themselves. In this manner, provision is made for ceaseless activity of the mental powers, and this constitutes the greatest delight. Wheat, for instance, is produced by the earth, and admirably adapted to the nutrition of the body ; but it may be rendered more grateful to the organ of taste, more salubrious to the stomach, and more stimulating to the nervous and muscular systems, by being stripped of its external skin, ground into flour, and baked by fire into bread. Now, the Creator obviously pre-arranged all these relations, when he endowed wheat with its properties, and the human body with its qualities and functions. In withholding congenital and intuitive knowledge of these qualities and mutual relations, but in bestowing faculties of Individuality, Form, Coloring ; Weight, Constructiveness, &c. fitted to find them out ; in rendering the exercise of these faculties agreeable ; and in leaving man in this condition, to proceed for himself,—he appears to me to have conferred on him the highest boon. The earth produces also hemlock and foxglove ; and, by the organic law, those substances, if taken in certain moderate quantities, remove diseases ; if in excess, they occasion death : but, again, man’s observing faculties are fitted, when applied under the guidance of Cautiousness and Reflection, to make this discovery ; and he is left to make it in this way, or suffer the consequences of neglect.

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‘ Further, water, when elevated in temperature, becomes steam; and steam expands with prodigious power; this power, confined by muscular energy, exerted on metal, and directed by intellect, is capable of being converted into the steam-engine, the most efficient, yet humble servant of man. All this was clearly pre-arranged by the Creator; and man’s faculties were adapted to it; but still we see him left to observe and discover the qualities and relations of water for himself. This duty, however, must be acknowledged as benevolently imposed, the moment we discover that the Creator has made the very exercise of the faculties pleasurable, and arranged external qualities and relations so beneficially, that, when known, they carry a double reward in adding by their positive influence to human gratification.

‘ The Knowing Faculties, as we have seen, observe the mere external qualities of bodies, and their simpler relations. The Reflecting Faculties observe relations also; but of a higher order. The former, for example, discover that the soil is clay or gravel; that it is tough or friable; that it is wet, and that excess of water impedes vegetation; that in one season the crop is large, and in the next deficient. The reflecting faculties take cognizance of the *causes* of these phenomena. They discover the *means* by which wet soil may be rendered dry; clay may be pulverized; light soil may be invigorated; and all of them made more productive; also the relationship of particular soils to particular kinds of grain. The inhabitants of a country who exert their knowing faculties in observing the qualities of their soil, their reflecting faculties in discovering its capabilities and relations to water, lime, manures, and the various species of grain, and who put forth their muscular and nervous energies in accordance with the dictates of these powers, receive a rich reward in a climate improved in salubrity, in an abundant supply of food, besides much positive enjoyment attending the exercise of the powers themselves. Those communities, on the other hand, who neglect to use their mental faculties and muscular and nervous energies, are punished by ague, fever, rheumatism, and a variety of painful affections, arising from damp air; are stinted in food; and, in wet seasons, are brought to the very brink of starvation by total failure of their crops. This punishment is a benevolent admonition from the Creator, that they are neglecting a great duty, and omitting to enjoy a great pleasure; and it will cease as soon as they have fairly redeemed the blessings lost by their negligence, and obeyed the laws of their being.

‘ The winds and waves appear, at first sight, to present insurmountable obstacles to man leaving the island or continent on which he happens to be born, and to his holding intercourse with his fellows in distant climes: But, by observing the relations of water to timber, he is able to construct a ship; by observing the

influence of the wind on a physical body placed in a fluid medium, he discovers the use of sails ; and, finally, by the application of his faculties, he has found out the expansive quality of steam, and traced its relations until he has produced a machine that enables him almost to set the roaring tempest at defiance, and to sail straight to the stormy north, although its loudest and its fiercest blasts oppose. In these instances, we perceive external nature admirably adapted to support the mental faculties in habitual activity, and to reward us for the exercise of them.

‘ It is objected to this argument, that it involves an inconsistency. Ignorance, it is said, of the natural laws, is necessary to happiness, in order that the faculties may obtain exercise in discovering them ;—nevertheless, happiness is impossible till these laws shall have been discovered and obeyed. Here, then, it is said, ignorance is represented as at once *essential* to, and *incompatible* with enjoyment. The same objection, however, applies to the case of the bee. Gathering honey is necessary to its enjoyment ; yet it cannot subsist and be happy till it has gathered honey, and therefore that act is both essential to, and incompatible with its gratification. The fallacy lies in losing sight of the natural constitution both of the bee and of man. While the bee possesses instinctive tendencies to roam about the fields and flowery meadows, and to exert its energies in labor, it is obviously beneficial to it to be furnished with motives and opportunities for doing so ; and so it is with man to obtain scope for his bodily and mental powers. Now, gathering knowledge is to the mind of man what gathering honey is to the bee. Apparently with the view of effectually prompting the bee to seek this pleasure, honey is made essential to its subsistence. In like manner, and probably with a similar design, knowledge is made indispensable to human enjoyment. Communicating intuitive knowledge of the natural laws to man, *while his present constitution continues*, would be the exact parallel of gorging the bee with honey in midsummer, when its energies are at their height. When the bee has completed its store, winter benumbs its powers, which resume their vigor only when its stock is exhausted, and spring returns to afford them scope. No torpor resembling that of winter seals up the faculties of the human race ; but their ceaseless activity is amply provided for. *First*, The laws of nature, compared with the mind of any individual, are of boundless extent, so that every one may learn something new to the end of the longest life. *Secondly*, By the actual constitution of man, he must make use of his acquirements habitually, otherwise he will lose them. *Thirdly*, Every individual of the race is born in utter ignorance, and starts from zero in the scale of knowledge, so that he has the laws to learn for himself.

‘ These circumstances remove the apparent inconsistency. If

man had possessed intuitive knowledge of all nature, he could have had no scope for exercising his faculties in *acquiring* knowledge, in *preserving* it, or in *communicating* it. The infant would have been as wise as the most revered sage, and forgetfulness would have been necessarily excluded.

‘Those who object to these views, imagine that after the human race has acquired knowledge of all the natural laws, if such a result be possible, they *will be in the same condition as if they had been created with intuitive knowledge*; but this does not follow. Although the *race* should acquire the knowledge supposed, it is not an inevitable consequence that *each individual* will necessarily enjoy it all; which, however, would follow from intuition. The entire soil of Britain belongs to the landed proprietors as a class; but each does not possess it *all*; and hence every one has scope for adding to his territories; with this advantage, however, in favor of knowledge, that the acquisitions of one do not impoverish another. Further, although the race should have learned all the natural laws, their children would not intuitively inherit their ideas, and hence the activity of every one, as he appears on the stage, would be provided for; whereas, by intuition, every child would be as wise as his grandfather, and parental protection, filial piety, and all the delights that spring from difference in knowledge between youth and age, would be excluded. 3d, *Using* of acquirements, is, by the actual state of man, essential to the preservation as well as the enjoyment of them. By intuition all knowledge would be habitually present to the mind without effort or consideration. On the whole, therefore, it appears that man’s nature being what it is, the arrangement by which he is endowed with powers to acquire knowledge, but left to find it out for himself, is both wise and benevolent.

‘It has been asked, “But is there no pleasure in science but that of discovery? Is there none in using the knowledge we have attained? Is there no pleasure in playing at chess after we know the moves?” In answer, I observe, that if we know beforehand all the moves that our antagonist intends to make and all our own, which must be the case if we know *everything* by intuition, we shall have no pleasure. The pleasure really consists in discovering the intentions of our antagonist, and in calculating the effects of our own play; a certain degree of ignorance of both of which is indispensable to gratification. In like manner, it is agreeable first to discover the natural laws, and then to study the “moves” that we ought to make, in consequence of knowing them. So much, then, for the *sources* of human happiness.

‘In the *second* place, To reap enjoyment in the *greatest quantity*, and to maintain it *most permanently*, the faculties

must be gratified *harmoniously* : In other words, if, among the various powers, the *supremacy* belongs to the moral sentiments, then the aim of our habitual conduct must be the attainment of objects suited to gratify them. For example, in pursuing wealth or fame as the leading object of existence, full gratification is not afforded to Benevolence, Veneration, and Conscientiousness, and, consequently, complete satisfaction cannot be enjoyed ; whereas, by seeking knowledge, and dedicating life to the welfare of mankind, and obedience to God, in our several vocations, these faculties will be gratified, and wealth, fame, health, and other advantages, will flow in their train, so that the whole mind will rejoice, and its delights will remain permanent as long as the conduct continues to be in accordance with the supremacy of the moral powers and the laws of external creation.

‘ *Thirdly*, To place human happiness on a secure basis, the laws of external creation themselves must accord with the dictates of the moral sentiments, and intellect must be fitted to discover the nature and relations of both, and to direct the conduct in coincidence with them.

‘ Much has been written about the extent of human ignorance ; but we should discriminate between absolute incapacity to know, and mere want of information arising from not having used this capacity to its full extent. In regard to the first, or our capacity to know, it appears probable that, in this world, we shall never know the essence, beginning, or end of things ; because these are points which we have no faculties calculated to reach : But the same Creator who made the external world constituted our faculties, and if we have sufficient data for inferring that His intention is, that we shall enjoy existence here while preparing for the ulterior ends of our being ; and if it be true that we can be happy here only by becoming acquainted with the qualities and modes of action of our own minds and bodies, with the qualities and modes of action of external objects, and with the relations established between them ; in short, by becoming thoroughly conversant with those natural laws, which, when observed, are pre-arranged to contribute to our enjoyment, and which, when violated, visit us with suffering, we may safely conclude that our mental capacities are wisely adapted to the attainment of these objects, whenever we shall do our own duty in bringing them to their highest condition of perfection, and in applying them in the best manner.

‘ If we advert for a moment to what we already know, we shall see that this conclusion is supported by high probabilities. Before the mariner’s compass and astronomy were discovered, nothing would seem more utterly beyond the reach of the human faculties than traversing the enormous Atlantic or Pacific Oceans ;

but the moment these discoveries were made, how simple did this feat appear, and how completely within the scope of human ability! But it became so, not by any addition to man's mental capacities, nor by any change in the physical world; but by the easy process of applying Individuality, and the other knowing faculties, to observe, Causality to reflect, and Constructiveness to build; in short, to perform their natural functions. Who that, forty years ago regarded the smallpox as a scourge, devastating Europe, Asia, Africa, and America, would not have despaired of the human faculties ever discovering an antidote against it? and yet we have lived to see this end accomplished by a simple exercise of Individuality and Reflection, in observing the effects of, and applying vaccine inoculation. Nothing appears more completely beyond the reach of the human intellect, than the cause of volcanoes and earthquakes, and yet some approach towards its discovery has recently been made.*

‘ Sir Isaac Newton observed, that all bodies which refracted the rays of light were combustible, except one, the diamond, which he found to possess this quality, but which he was not able, by any powers he possessed, to burn. He did not conclude, however, from this, that the diamond was an exception to the uniformity of nature. He inferred, that as the same Creator made the refracting bodies which he was able to consume and the diamond, and proceeded by uniform laws, the diamond would, in all probability, be found to be combustible, and that the reason of its resisting his power, was ignorance on his part of the proper way to produce its conflagration. A century afterwards, chemists made the diamond blaze with as much vivacity as Sir Isaac Newton had done a wax candle. Let us proceed, then, on an analogous principle. If the intention of our Creator was, that we should enjoy existence while in this world, then He knew what was necessary to enable us to do so; and He will not be found to have failed in conferring on us powers fitted to accomplish His design, provided we do our duty in developing and applying them. The great motive to exertion is the conviction, that increased knowledge will furnish us with increased means of doing good,—with new proofs of benevolence and wisdom in the Great Architect of the Universe.’—pp. 82, 95.

The following extracts are from that part of the work which treats of the ‘ evils that befall mankind from infringement of the organic laws.’

‘ An organized being, I have said, is one which derives its existence from a previously existing organised being, which subsists on food, grows, attains maturity, decays and dies. What-

* *Vide* Cordier, in Edin. New Phil. Journ. No. VIII. p. 273.

ever the ultimate object of the Creator, in constituting organised beings, may be, it will scarcely be denied, that part of His design is, that they should enjoy their existence here; and, if so, every particular part of their systems will be found conducive in its intention to this end. The first law, then, that must be obeyed, to render an organised being perfect in its kind, is, that the germ from which it springs shall be complete in all its parts, and sound in its whole constitution; the second is, that the moment it is ushered into life, and as long as it continues to live, it shall be supplied with food, light, air, and every physical aliment necessary for its support; and the third law is, that it shall duly exercise its functions. When all these laws are obeyed, the being should enjoy pleasure from its organised frame, if its Creator is benevolent; and its constitution should be so adapted to its circumstances, as to admit of obedience to them, if its Creator is wise and powerful. Is there, then, no such phenomenon on earth, as a human being existing in full possession of organic vigor, from birth till advanced age, when the organised system is fairly worn out? Numberless examples of this kind have occurred, and they show to demonstration, that the corporeal frame of man is so constituted, as to admit the possibility of his enjoying organic health and vigour, during the whole period of a long life.'—pp. 112, 113.

'Now, as a natural law never admits of an-exception; for example, as no man ever sees without eyes, or digests without a stomach, we are entitled to say, that the best condition in which an organised being has ever been found, is fairly within the capabilities of the race. A human being, vigorous and healthy from the cradle to the grave, could no more exist, unless the natural constitution of his organs permitted it, of design, than vision could exist without eyes. Health and vigour cannot result from infringement of the organic laws; for then pain and disease would be the objects of these laws, and beneficence, wisdom, and power, could never be ascribed to the Creator, who had established them. Let us hold, then, that the organised system of man, in itself—admits of the possibility of health, vigour, and organic enjoyment, during the full period of life; and proceed to inquire into the causes why these advantages are not univer-

'One organic law, is, that the germ of the infant being must be complete in all its parts, and perfectly sound in its condition, as an indispensable requisite to its vigorous developement, and full enjoyment of existence. If the corn that is sown is weak, wasted, and damaged, the plants that spring from it will be feeble, and liable to speedy decay. The same law holds in the animal kingdom; and I would ask, has it hitherto been observed,

man? It is notorious that it has not. Indeed, its existence has been either altogether unknown, or in a very high degree disregarded by human beings. The feeble, the sickly, the vacillated with age, and the incompletely developed, through extreme poverty, and without the least compunction regarding the organization which they shall transmit to their offspring send into the world miserable beings, the very rudiments of whose existence are tainted with disease'—pp. 114, 115

'A second organic law regards nutriment' which must be supplied of a suitable kind, and in due quantity. This law requires also free air, light, cleanliness, and attention to every physical arrangement by which the functions of the body may be favored or impaired. Have mankind, then, obeyed or neglected this institution? I need scarcely answer the question. If we are to obey institutions, we must first know them. Before we can know the organic constitution of our body, we must study that constitution, and the study of the human constitution is anatomy and physiology. Before we can be acquainted with its relations to external objects, we must learn the existence and qualities of these objects, unfolded by chemistry, natural history, and natural philosophy, and compare them with the constitution of the body. When we have fulfilled these conditions, we shall be better able to discover the laws which the Creator has instituted in regard to our organic system. If we do not, however, that such studies are impracticable to the great mass of mankind, and, besides, do not appear to them to be profitable, we must leave them. They are impracticable to us, who have no other business, founding their public virtue, and gathering in the harvest of the propensities, instead of that of a more fertile soil. I am content, indeed, that exercise of the sciences, which is the duty of a few, and of *all* the race by the Creator's fiat, is the duty of all, who would obey this law, a moderate acquaintance with the sciences, and salubrious in itself, would suffice to guard the mind and to surround it with every necessary precaution, and to secure the perfection of the physical and moral powers. The Creator has bestowed on us Reasoning Faculties, that we might be able to study these sciences, Reasoning Faculties, which are the basis of all Moral Science, and the foundation of all the laws of the institutions, and the basis of all the sciences, and the basis of all the sciences, unfold, and the Creator has made it His purpose to bestow upon wisdom, and of obeying His laws, and of obeying His institutions, lightful and unobscuring of all vocations. In place of such a course of education being impracticable, or the neglect of the Creator's law, to be prepared in direct opposition to its actual accomplishment.

‘ The second objection, that those who study these sciences are not more healthy and happy, as organised beings, than those who neglect them admits also of an easy answer. Parts of these sciences are taught to a few individuals, whose main design in studying them is to apply them as means of acquiring wealth and fame ; but they have nowhere been taught as connected parts of a great system of natural arrangements, fraught with the highest influences on human enjoyment ; and in no instance have the intellect and sentiments been systematically directed to the natural laws, as the grand fountains of happiness and misery to the race, and trained to observe and obey them as the Creator’s institutions.

‘ A third organic law, is, that all our functions shall be duly exercised ; and is this law observed by mankind ? Many persons are able, from experience, to attest the severity of the punishment that follows from neglecting to exercise the nervous and muscular systems, in the lassitude, indigestion, irritability, debility, and general uneasiness that attend a sedentary and inactive life. But the penalties that attach to neglect of exercising the *brain* are much less known, and therefore, I shall notice them more at length. How often have we heard the question asked, What is the use of education ? The answer might be illustrated by explaining to the inquirer the nature and objects of the various organs of the body, such as the limbs, lungs, eyes, and then asking him if he could perceive any advantage to a being so constituted, in obtaining access to earth, air, and light. He would, at once, declare, that they were obviously of the very highest utility to him, for they were the only conceivable objects, by means of which these organs could obtain scope for action, which action we suppose him to know to be pleasure. To those, then, who know the constitution of the intellectual and moral powers of man, I need only say, that the objects introduced to the mind by education, bear the same relation to them that the physical elements of nature bear to the nerves and muscles ; they afford them scope for action, and yield them delight. The meaning which is commonly attached to the word *use* in such cases, is how much *money, influence, or consideration*, will education bring ; these being the only objects of strong desire with which uncultivated minds are acquainted ; and they do not perceive in what way education can greatly gratify such propensities. But the moment the mind is opened to the perception of its own constitution and to the natural laws, the great advantage of moral and intellectual cultivation, as a means of exercising the faculties, and of directing the conduct in obedience to these laws, becomes apparent.

‘ But there is an additional benefit arising from healthy activity of brain, which is little known. The brain is the fountain of

nervous energy to the whole body, and different modifications of that energy appear to take place, according to the mode in which the faculties and organs are affected. For example, when misfortune and disgrace impend over us, the organs of Cautiousness, Self-esteem, Love of Approbation, &c. are painfully excited; and then they transmit an impaired or a positively noxious nervous influence to the heart, stomach, intestines, and thence to the rest of the body; the pulse becomes feeble and irregular, digestion is deranged, and the whole corporeal frame wastes. When, on the other hand, the cerebral organs are agreeably affected, a benign and vivifying nervous influence pervades the frame, and all the functions of the body are performed with more pleasure and completeness. Now, it is a law, that the quantum of nervous energy increases with the number of cerebral organs roused to activity. In the retreat of the French from Moscow, for example, when no enemy was near, the soldiers became depressed in courage, and enfeebled in body, they nearly sunk to the earth through exhaustion and cold; but no sooner did the fire of the Russian guns sound in their ears, or the gleam of their bayonets flash in their eyes, than new life seemed to pervade them. They wielded powerfully the arms, which a few moments before, they could scarcely carry or trail on the ground. No sooner, however, was the enemy repulsed, than their feebleness returned. The theory of this is, that the approach of the combat called into activity a variety of additional faculties: these sent new energy through every nerve, and while their vivacity was maintained by the external stimulus, they rendered the soldiers strong beyond their merely physical condition. Many persons have probably experienced the operation of the same principle. When sitting feeble and listless by the fire, we have heard of an accident having occurred to some beloved friend, who required our instantaneous aid, or an unexpected visitor has arrived, in whom our affections were bound up, in an instant our lassitude was gone, and we moved with an alertness and animation that seemed surprising to ourselves. The cause was the same; these events roused Adhesiveness, Benevolence, Love of Approbation, Intellect, and a variety of faculties, which were previously dormant, and their influence invigorated the limbs. Dr Sparmann, in his Voyage to the Cape, mentions, that "there was now again a great scarcity of meat in the wagon; for which reason my Hottentots began to grumble, and reminded me that we ought not to waste so much of our time in looking after insects and plants, but give a better look out after the game. At the same time, they pointed to a neighbouring dale overrun with wood, at the upper edge of which, at the distance of about a mile and a quarter from the spot where we then were, they had seen several buffaloes. Accordingly, we went thither; but though our fatigue was lessened by

our Hottentots carrying our guns for us up a hill, yet we were quite out of breath, and overcome by the sun, before we got up to it. Yet, what even now appears to me a matter of wonder is, *that as soon as we got a glimpse of the game, all this languor left us in an instant.* In fact, we each of us strove to fire before the other, so that we seemed entirely to have lost sight of all prudence and caution.”—“In the mean time, our temerity, which chiefly proceeded from hurry and ignorance, was considered by the Hottentots as a proof of spirit and intrepidity hardly to be equalled.”

‘It is part of the same law, that the more agreeable the mental stimulus, the more benign is the nervous influence transmitted to the body.

‘If we imagine a man or woman, who has received from nature a large and tolerably active brain, but who has not enjoyed the advantages of a scientific or extensive education, so as to feel an interest in moral and intellectual pursuits for their own sake, and who, from possessing wealth sufficient to remove the necessity for labor, is engaged in no profession, we shall find a perfect victim to infringement of the natural laws. The individual ignorant of these laws, will, in all probability, neglect nervous and muscular exercise, and suffer the miseries arising from impeded circulation and impaired digestion; in entire want of every object on which the energy of his brain might be expended, its stimulating influence on the body will be withheld, and the effects of muscular inactivity tenfold aggravated; all the functions will, in consequence, become enfeebled; lassitude, uneasiness, anxiety, and a thousand evils, will arise; and life, in short, will become a mere endurance of punishment for infringement of institutions, calculated, in themselves, to promote happiness and afford delight, when known and obeyed. This fate frequently overtakes uneducated females, whose early days have been occupied with business, or the cares of a family, but which occupations have ceased before old age had diminished corporeal vigour; it overtakes men also, who, uneducated, retire from active business in the prime of life. In some instances, these evils accumulate to such a degree that the brain itself gives way, its functions become deranged, and insanity is the result.

‘It is worthy of remark, that the more elevated the objects of our study, the higher in the scale are the mental organs which are exercised, and the higher the organs the more pure and intense is the pleasure; and hence, a vivacious and regularly supported excitement of the moral sentiments and intellect, is, by the organic law, highly favorable to health and corporeal vigour. In the fact of a living animal being able to retain life in an oven that will bake dead flesh, we see an illustration of the organic law rising above the purely physical; and, in the circumstance

of the moral and intellectual organs transmitting the most favourable nervous influence to the whole bodily system, we have an example of the moral and intellectual law rising higher than the mere organic.

‘No person after having his intellect and sentiments imbued with a perception of, and belief in, the natural laws, as now explained, can possibly desire idleness, as a source of pleasure; nor can he possibly regard muscular exertion and mental activity, when not carried to excess, as anything else than enjoyments kindly vouchsafed to him by the benevolence of the Creator. The notion that moderate labor and mental exertion are evils, can originate only from ignorance, or from viewing the effects of over-exhaustion as the result of the natural law, and not as the punishment for infringement of it.

‘If, then, we sedulously inquire, in each particular instance, into the *cause* of the sickness, pain, premature death, and general derangement of the corporeal frame of man, which we see around us, and endeavour to discover whether it has originated in obedience to the physical and organic laws, or sprung from infringement of them, we shall be able to form some estimate how far bodily suffering is justly attributable to imperfections of nature, and how far to our own ignorance and neglect of divine institutions.

‘The foregoing principles being of much practical importance, may, with propriety, be elucidated by a few cases of actual occurrence. Two or three centuries ago, various cities in Europe were depopulated by the plague, and, in particular, London was visited by an awful mortality from this cause, in the reign of Charles the Second. The people of that age attributed this scourge to the inscrutable decrees of Providence, and some to the magnitude of the nation’s moral iniquities. According to the views now presented, it must have arisen from infringement of the *organic laws*, and been intended to enforce stricter obedience to them in future. According to this view, there was nothing inscrutable in its causes or objects, which, when clearly analysed, appear to have had no direct reference to the moral condition of the people: I say *direct* reference to the moral condition of the people, because it would be easy to show, that the physical, organic, and all the other natural laws, are connected indirectly, and constituted in harmony, with the moral law; and that infringement of the one often leads to disobedience to another, and brings a double punishment on the offender. But, in the mean time, I observe that the facts recorded in history exactly correspond with the theory now propounded. The streets of London were excessively narrow, the habits of the people dirty, and no adequate provision was made for removing the filth unavoidably produced by a dense population. The great fire in

that city, which happened soon after the pestilence, afforded an opportunity of remedying, in some degree, the narrowness of the streets; and habits of increasing cleanliness abated the filth; these changes brought the people into a closer obedience to the organic laws, and no plague has since returned. Again, till very lately, thousands of children died yearly of the smallpox, but, in our day, vaccine inoculation saves ninety-nine out of a hundred, who, under the old system, would have died. The theory of its operation is not known, but we may rest assured, that it places the system more in accordance with the organic laws, than in the cases where death ensued. A gentleman, who died about ten years ago at an advanced period of life, told me, that, six miles west from Edinburgh, the country was so unhealthy in his youth, that every spring the farmers and their servants were seized with fever and ague, and required regularly to undergo bleeding, and a course of medicine, to prevent attacks, or restore them from their effects. At the time, these visitations were believed to be sent by Providence, and to be inherent in the constitution of things; after, however, said my informant, an improved system of agriculture and draining was established, and vast pools of stagnant water formerly left between the ridges of the field were removed, dunghills carried to a distance from the houses, and the houses themselves made more spacious and commodious, every symptom of ague and marsh-fever disappeared from the district, and it became highly salubrious. In other words, as soon as the gross infringement of the organic laws was abated by a more active exertion of the muscular and intellectual powers of man, the punishment ceased. In like manner, how many calamities occurred in coalpits, in consequence of infringement of a physical law, viz. by introducing lighted candles and lamps into places filled with hydrogen gas, that had emanated from seams of coal, and which exploded, scorched, and suffocated the men and animals within its reach, until Sir Humphrey Davy discovered that the Creator had established such a relation betwixt flame, wire-gauze, and hydrogen gas, that by surrounding the flame with gauze, its power of exploding hydrogen was counteracted. By the simple application of a covering of wire-gauze, put over and around the flame, it is prevented from igniting gas beyond it, and colliers are now able to carry, with safety, lighted lamps into places highly impregnated with inflammable air. I have been informed, that the accidents from explosion, which still occasionally occur in coal mines, arise from neglecting to keep the lamps in perfect condition.

‘It is needless to multiply examples in support of the proposition, that the organized system of man, in itself, admits of a healthy existence from infancy to old age, provided its germ has been healthy, and its subsequent condition has been

uniformly in harmony with the physical and organic laws; but it has been objected, that although the human faculties may perhaps be adequate to discover these laws, and to record them in books, yet they are totally incapable of retaining them in the memory, and of formally applying them in every act of life. If, it is said, we could not move a step without calculating and adjusting the body to the law of gravitation, and could never eat a meal without a formal rehearsal of the organic laws, life would become oppressed by the pedantry of knowledge, and rendered miserable by petty observances and trivial details. The answer to this is, that all our faculties are adapted by the Creator to the external world, and act *instinctively* when their objects are placed in the proper light before them. For example, in walking on a foot-path in the country during day, we are not conscious, in adjusting our steps to the inequalities of the surface, of being overburdened by mental calculation. In fact, we perform this adjustment with so little trouble, that we are not aware of having made *any particular* mental or muscular effort. But, on returning at night, when we cannot see, we stumble, and discover, for the first time, how important a duty our faculties had been performing during day, without our having adverted to their labors. Now, the simple medium of light is sufficient to bring clearly before our eyes the inequalities of ground; but to make the mind equally familiar with the nature of the countless objects, and their relations, which abound in external nature, an intellectual light is necessary, which can be struck out only by exercising and applying the knowing and reflecting faculties; but the moment that light is obtained, and the qualities and relationships in question are perceived by its means, the faculties, so long as the light lasts, *will act instinctively* in adapting our conduct to the nature of the objects, just as in accommodating our movements to the unequal surface of the ground. It is no more necessary for us to go through a course of physical, botanical, and chemical reasoning, before we are able to abstain from eating hemlock, after its properties are known, than it is to go through a course of mathematical demonstration, before lifting the one foot higher than the other, in ascending a stair. At present, physical and political science, morals and religion, are not taught as parts of one connected system; nor are the relations between them and the constitution of man pointed out to the world. In consequence, theoretical knowledge and practice are often widely separated. Some of the advantages of the scientific education now recommended would be the following :

‘ In the first place, the physical and organic laws, when truly discovered, appear to the mind as institutions of the Creator, wise and salutary in themselves, unbending in their operation,

and universal in their application. They interest our intellectual faculties, and strongly impress our sentiments. The necessity of obeying them, comes upon us with all the authority of a mandate of God. While we confine ourselves to a mere recommendation to beware of damp, to observe temperance, or to take exercise, without explaining the *principle*, the injunction carries only the weight due to *the authority of the individual* who gives it, and is addressed to only two or three faculties, Veneration and Cautiousness, for instance, or Self-love in him who receives it. But if we are made acquainted with the elements of the physical world, and with those of our organized system,—with the uses of the different parts of the latter, and the conditions necessary to their healthy action,—with the causes of their derangement, and the pains consequent thereon : and if the obligation to attend to these conditions be enforced on our moral sentiments and intellect, then the motives to observe the physical and organic laws, as well as *the power of doing so*, will be prodigiously increased. Before we can dance well, we must not only *know the motions*, but our muscles must be trained *to execute them*. In like manner, to enable us to act on precepts, we must not only comprehend their meaning, but our intellects and sentiments must be disciplined into actual performance. Now, the very act of acquiring connected scientific information concerning the natural world, its qualities, and their relations, is to the intellect and sentiments what practical dancing is to the muscles ; it *invigorates them* ; and, as obedience to the natural laws must spring from them, exercise renders it more easy and delightful.

2. It is only by being taught the *principle* on which consequences depend, that we see the *invariableness* of the results of the physical and organic laws ; acquire confidence in, and respect for the laws themselves ; and fairly endeavour to accommodate our conduct to their operation. Dr Johnson defines “principle” to be “fundamental truth ; original postulate ; first position from which others are deduced ;” and in these senses I use the word. The human faculties are instinctively active, and desire gratification ; but Intellect itself must have fixed data, on which to reason, otherwise it is in itself a mere impulse. The man in whom Constructiveness and Weight are powerful, will naturally betake himself to constructing machinery ; but if he be ignorant of the principles of mechanical science, he will not direct his efforts to as important ends, and attain them as successfully, as if his intellect were stored with these. Principles are deduced from the *laws* of nature. A man may make music by the instinctive impulses of Time and Tune ; but there are immutable laws of harmony ; and, if ignorant of these, he will not perform so invariably, correctly, and in good

taste, as if he knew them. In every art and science, there are principles referable solely to the constitution of nature, but these admit of countless applications. A musician may produce gay, grave, solemn, or ludicrous tunes, all good of their kind, by following the laws of harmony ; but he will never produce one good piece by violating them. While the inhabitants west of Edinburgh allowed the stagnant pools to deface their fields, some seasons would be more healthy than others ; and, while the cause of the disease was unsuspected, this would confirm them in the notion that health and sickness were dispensed by an overruling Providence, on inscrutable principles, which they could not comprehend ; but the moment the cause was known, it would be found that the most healthy seasons were those that were cold and dry, and the most sickly those that were warm and moist ; and they would then perceive, that the superior salubrity of one year, and unwholesomeness of another, were clearly referable to *one principle*, and would be both more strongly prompted, and rendered morally and intellectually more capable of applying the remedy. If some intelligent friend had merely told them to drain their fields, and remove their dung-hills, they would not probably have done it ; but whenever their intellects were enlightened, and their sentiments roused, to appreciate the advantages of adopting, and disadvantages of neglecting, the improvement, it became easy.

‘ The truth of these views may be still further illustrated by examples. A young gentleman of Glasgow, whom I knew, went out, as a merchant, to North America. Business required him to sail from New York to St Domingo. The weather was hot, and he, being very sick, found the confinement below deck, in bed, as he said, intolerable ; that is, this confinement was, for the moment, more painful than the course which he adopted, of laying himself down at full length on the deck, in the open air. He was warned by his fellow passengers, and the officers of the ship, that he would inevitably induce fever by this proceeding : but he was utterly ignorant of the physical and organic laws ; his intellect had been trained to regard only wealth and present pleasure as objects of real importance ; it could perceive no necessary connexion between exposure to the mild and grateful sea breeze of a warm climate and fever, and he obstinately refused to quit his position. The consequence was, that he was rapidly taken ill, and lived just one day after arriving at St Domingo. Knowledge of chemistry and physiology would have enabled him, in an instant, to understand that the sea air, in warm climates, holds a prodigious quantity of water in solution, and that damp and heat, operating together on the human organs, tend to derange their healthy action, and ultimately to destroy them entirely : and if his sentiments had been

deeply imbued with a feeling of the indispensable duty of yielding obedience to the institutions of the Creator, he would have actually enjoyed, not only a *greater desire*, but a *greater power* of supporting the temporary inconvenience of the heated cabin, and might, by possibility, have escaped death.'—pp. 117–134.

From the closing observations of the author we quote the following, in which the subject is considered in connexion with the general interests of society, and with particular reference to education.

‘The professions, pursuits, amusements, and hours of exertion of individuals, ought also to bear reference to their physical and mental constitution; but hitherto no guiding principle has been possessed to regulate practice in these important particulars,—another evidence that the science of man has been unknown.

‘But we require only to attend to the scenes daily presenting themselves in society, to obtain irresistible demonstration of the consequences resulting from the want of a true theory of human nature, and its relations. Every preceptor in schools, every professor in colleges, every author, editor, and pamphleteer, every member of Parliament, counsellor and judge, has a set of notions of his own, which in his mind hold the place of a system of the philosophy of man; and although he may not have methodised his ideas, or even acknowledged them to himself as a theory, yet they constitute a standard to him by which he practically judges of all questions in morals, politics, and religion; he advocates whatever views coincide with them, and condemns all that differ from them, with as unhesitating dogmatism as the most pertinacious theorist on earth. Each also despises the notions of his fellows, in so far as they differ from his own. In short, the human faculties too generally operate simply as instincts, exhibiting all the confiction and uncertainty of mere feeling, unenlightened by perception of their own nature and objects. Hence public measures in general, whether relating to education, religion, trade, manufactures, the poor, criminal law, or to any other of the dearest interests of society, instead of being treated as branches of one general system of economy, and adjusted each on scientific principles in harmony with all the rest, are supported or opposed on narrow and empirical grounds, and often call forth displays of ignorance, prejudice, selfishness, intolerance, and bigotry, that greatly obstruct the progress of improvement. Indeed, unanimity, even among sensible and virtuous men, will be impossible, so long as no standard of mental philosophy is admitted to guide individual feelings and perceptions. But the state of things now

described could not exist if education embraced a true system of human nature and its relations.

‘ If then, phrenology be true, it will, when matured, supply the deficiencies now pointed out.

‘ But here another question naturally presents itself, How are the views now expounded, supposing them to contain some portion of truth, to be rendered practical? In answer I remark, that the institutions and manners of society indicate the state of mind of the influential classes at the time when they prevail. The trial and burning of old women as witches, point out clearly the predominance of Destructiveness and Wonder over Intellect and Benevolence, in those who were guilty of such cruel absurdities. The practices of wager of battle, and ordeal by fire and water, indicate Combativeness, Destructiveness, and Veneration, to have been in great activity in those who permitted them, combined with much intellectual ignorance of the natural constitution of the world. In like manner, the enormous sums willingly expended in war, and the small sums grudgingly paid for public improvements; the intense energy displayed in the pursuit of wealth; and the general apathy evinced in the search after knowledge and virtue, unequivocally proclaim activity of Combativeness, Destructiveness, Acquisitiveness, Self-esteem, and Love of Approbation; with comparatively moderate vivacity of Benevolence and Intellect, in the present generation. Before, therefore, the practices of mankind can be altered, the state of their minds must be changed. No practical error can be greater than that of establishing institutions greatly in advance of the mental condition of the people. The rational method is first to instruct the intellect, then to interest the sentiments, and, last of all, to form arrangements in harmony with, and resting on, these as their basis.

‘ The views developed in the preceding chapters, if founded in nature, may be expected to lead, ultimately, to considerable changes in many of the customs and pursuits of society; but to accomplish this effect, the principles themselves must first be ascertained to be true; then they must be sedulously taught; and when the public mind has been thoroughly prepared, then only ought important practical alterations to be proposed. It appears to me that a long series of years will be necessary to bring even civilized nations into a condition systematically to obey the natural laws.

‘ The preceding chapters may be regarded, in one sense, as an introduction to an Essay on Education. If the views unfolded in them be in general sound, it will follow that education has scarcely yet commenced. If the Creator has bestowed on the body, on the mind, and on external nature, determinate

constitutions, and arranged these so as to act on each other, and to produce happiness or misery to man, according to certain definite principles, and if this action goes on invariably, inflexibly, and irresistibly, whether men attend to it or not, it is obvious that the very basis of useful knowledge must consist in an acquaintance with these natural arrangements; and that education will be valuable in the exact degree in which it communicates such information, and trains the faculties to act upon it. Reading, writing, and accounts, which make up the instruction enjoyed by the lower orders, are merely *means of acquiring knowledge*, but do not *constitute* it. Greek, Latin, and mathematics, which are added in the education of the middle classes, are still only *means* of obtaining information; so that, with the exception of the few who pursue physical science, society dedicates very little attention to the study of the natural laws. In following out the views now discussed, therefore, each individual, according as he becomes acquainted with the natural laws, ought to obey them, and to communicate his experience of their operations to others; avoiding at the same time all attempts at subverting, by violence, established institutions, or outraging public sentiment by intemperate discussions. The doctrine now unfolded, if true, authorises us to predicate that the most successful method of meliorating the condition of mankind, will be that which appeals most directly to their moral sentiments and intellect; and, I may add from experience and observation, that, in proportion as any individual becomes acquainted with the real constitution of the human mind, will his conviction of the efficacy of this method increase.

‘The next step ought to be to teach those laws to the young.* Their minds, not being pre-occupied by prejudices, will recognize them as congenial to their constitution; the first generation that has embraced them from infancy will proceed to modify the institutions of society into accordance with their dictates; and in the course of ages they may at length be acknowledged as practically useful. All *true* theories have ultimately been adopted and influenced practice; and I see no reason to fear that the present will prove an exception. The failure of all previous systems is the natural consequence of their being unfounded; if this one shall resemble them, it will deserve, and assuredly will meet with, a similar fate. A perception of the importance of the natural laws will lead to their observance, and this will be attended with an improved development of brain, thereby increasing the desire and capacity for obedience.

* Some observations on Education will be found in the *Phrenological Journal*, vol. iv. p. 407.

‘ Finally. If it be true that the Natural Laws must be obeyed as a preliminary condition to happiness in this world, and if virtue and happiness be inseparably allied, the religious instructors of mankind may probably discover in the general and prevalent ignorance of these laws, one reason of the limited success which has hitherto attended their own efforts at improving the condition of mankind; and they may perhaps perceive it to be not inconsistent with their sacred office, to instruct men in the natural institutions of the Creator, in addition to his revealed will, and to recommend obedience to both. They exercise so vast an influence over the best members of society, that their countenance may hasten, or their opposition retard, by a century, the practical adoption of the natural laws, as guides of human conduct.’—pp. 282, 288.

ART. IV.—*The Journal of Health.* Conducted by an Association of Physicians. Philadelphia, J. Dobson. Boston, Carter & Hendee.

WE have just looked over the first three numbers of this journal, and hail them as harbingers of fair promise for a periodical on the plan proposed in the prospectus. Something of the kind here contemplated, we think has been long needed. Former attempts have been made in our country to get up a popular journal for a similar purpose; but they have all failed, either *directly*, for want of sufficient talent in conducting them, or *indirectly*, in consequence of their having changed their ground, and gradually verged to a character, only to be noticed by medical men.

A work, of the kind under consideration, should be, we think, wholly under the direction of practising physicians. Their daily occupation places them in a situation to know and feel the effects of the *ignorance* and the *prejudices* which prevail in the community, in relation to medicine and its professors, and to judge best what is wanting, to remove *both* from the minds of common readers. The intelligent and reading part of our population are daily seeking more and more for knowledge in almost every science; and we believe that much may be taught in a familiar and popular manner, concerning the structure of the animal frame, the laws of the animal economy; of the

properties and effects of the various articles of diet and medicine ; and the influence of climate, temperature, and the habits of men, on the physical properties and natural functions of their bodies.

That our views are in accordance with those of the editors of the Journal of Health will appear by the following quotations from the prospectus, on the first page of No. 1.

‘ Deeply impressed with the belief, that mankind might be saved a large amount of suffering and disease, by a suitable knowledge of the natural laws to which the human frame is subjected, they (the editors, or conductors,) propose laying down plain precepts, in easy style and familiar language, for the regulation of all the physical agents necessary to health, and to point out under what circumstances of excess or misapplication they become injurious or fatal.

‘ The properties of the air, in its several states of heat, coldness, dryness, moisture, and electricity ; the relative effects of different articles of solid and liquid aliment ; clothing, for protection against atmospherical vicissitudes, and a cause of disease, when under the direction of absurd fashions, shall be prominent topics for inquiry and investigation in this journal.

‘ The value of dietetic rules shall be continually enforced, and the blessings of temperance dwelt on, with emphasis proportionate to their high importance and deplorable neglect. Physical education, so momentous a question for the lives of children, and the happiness of their parents, shall be discussed in a spirit of impartiality, and with the aid of all the data which have been furnished by enlightened experience.

‘ Divested of professional language and details, and varied in its contents, the Journal of Health will, it is hoped, engage the attention and favour of the female reader, whose amusement and instruction shall constantly be kept in view during the prosecution of this work.’

We hope the editors of the Journal of Health will keep this last promise in full remembrance, and that they will not suffer their project to fail, from the *indirect* cause which we have mentioned. That it will do so from the *other*, we have too high an opinion of an association of our Philadelphia brethren to suppose.

We cannot but consider it the duty of physicians to contribute to a work of this nature, and we hope the conductors of it will receive all the aid and encouragement to which they are entitled.

The subjects which are discussed in the numbers before us, are numerous, and well selected ; and are presented with a de-

gree of brevity, candor, and plainness of speech, which are highly important, and desirable in such a work. We wish to present one or two more extracts, and shall select such as we think may be very usefully repeated in the pages of the Journal of Education.

'Physical Education of Girls.' Under this head it is stated that, 'in the physical education of children, it is not sufficient to consult their present ease and well-being ; but attention is equally due to whatever is calculated to promote the vigour and usefulness of their future lives, by strengthening the constitution, preserving the limbs in the free exercise of all their motions, and guarantying the system from the deleterious influence of those agents by which it is to be constantly surrounded.

'Throughout the whole animal kingdom, the young are prompted by an instinctive impulse to almost constant exercise : conformably to this intimation of nature, the infancy of man should be passed in those harmless gambols which exercise the limbs, without requiring any minute direction from the head, or the constant guidance of a nurse.

'From exercise, and the free use of pure air, no child should be debarred : upon these depend, in a great measure, the health, vigour, and cheerfulness of youth ; while they contribute essentially to the permanence of the same blessing during adult life.

'The bodily exercise of the two sexes ought, in fact, to be the same. Girls should not therefore be confined to sedentary life within the precincts of a nursery, or at best, permitted a short walk, veiled and defended from every gleam of sunshine, and every breath of air.'

'Complaints of the Studious.' By long continued sedentary habits, an almost total neglect of exercise in the open air, and too prolonged and intense application of the mind, the studious are but too apt to bring upon themselves a long train of stomachic and nervous affections, by which their progress in the pursuit of knowledge is often seriously impeded, or entirely interrupted. Those who read and write much, should pay great attention to their position. They ought to sit and stand by turns, always preserving the body in as erect a posture as possible. It has an excellent effect frequently to read and speak aloud ; this not only exercises beneficially the lungs, but nearly the whole body. Midnight studies ought undoubtedly to be avoided, as in the highest degree pernicious to health. The morning has been allowed, by all medical writers, to be the time best adapted to study.'

We close our remarks, with our best wishes for the success of the Journal of Health, and the assurance that we shall gladly add our name to the list of its subscribers.

ART. V.—*Extract from an Address delivered before the Worcester County Lyceum, at Worcester, Oct 28th, 1829. By EMORY WASHBURN, Esq.*

PERHAPS, the most important subject upon which these associations may be brought to bear with the greatest success, is that of education. Such is the veneration with which we look upon the act of our forefathers in establishing common schools, and so perfect, in fact, is that system of education, devised by them, in its various parts, that we should suggest with no ordinary degree of diffidence, any changes in the system under the name of improvements, if both analogy and experience did not justify it.

It is certainly remarked, that without any experience to guide them, or any model from which to copy, the founders of our common schools should have originated and matured a plan which is susceptible of so few changes and improvements. Their adaptation, to the then wants of the people, the simplicity of the system in its parts, and its efficacy as a whole are deserving of unqualified praise. It is not, however, any imputation upon them or their system to say that it is at this day susceptible of improvement, or to call upon all who feel how intimately it is connected with the enjoyment of all that is valuable under our government, to unite their exertions to perfect, so far as is possible, a temple whose plan and foundation are so admirable and complete.

The advance of the age, and the new discoveries which have been made in the moral as well as the physical world, call for a corresponding advance and improvement in our systems of education. I forbear going into detail at this time upon what these precise improvements should be, for I have seen the failure of too many of the Utopian schemes of innovators, who, in their zeal to do much good, have done a positive evil; who, to open a royal road, a pure and smoother highway to knowledge, have closed the ordinary avenues, and at last found themselves and their followers lost in the mazes of an untried region, without a path to follow or a guide to lead them. Every age has had its reformers like these, but no age has been more prolific of them than our own. We have at one time been told how the heights of Parnassus might be scaled at a single leap, and at another have seen our new fangled schools, through which the paths to science and literature lay among flowers

and sunny glades, as inviting as the poet's description of the approach to the Castle of Indolence, and where, as in that abode of delight,

——— 'sooth to say,
No living wight could work, ne cared even for play.'

But though these experiments have terminated as all experiments must, which have for their object the acquisition of knowledge, without patient and assiduous labor, the science of teaching has by no means been stationary. The objects and means of education have become better understood. It has assumed a more practical and useful character, especially in its higher branches, and the progress which it has made, together with the importance which exists under a government like ours, of every one being properly and practically educated, must gratify while they should stimulate the friends of improvement to fresh and united exertions.

If there were no other circumstance from which to derive encouragement except that discovery of modern days, an infant school, all that we could urge and all that we could anticipate, would derive support from reason and analogy. It remained for modern times to discover how to employ those days of infant existence which have too often been employed in nothing better than developing the corporal functions and powers by, as it were, a mere vegetable growth and expansion in exercising, strengthening, and developing the intellectual being, and giving life and energy to the immortal mind. Results alike gratifying and surprising have sprung from these humble seminaries, where education lays its tender and plastic hand upon the intellect and character of the future men and women of our country, before they have been suffered to gain strength by neglect, and to assume those perverse forms from long indulgence, which education, too often in vain, labors to correct. Whatever is accomplished in infant schools, might, perhaps, ordinarily be affected by maternal care and solicitude, applied in the family circle at home, if circumstances of property and leisure permitted the application of such attention. The multiplicity of every mother's cares is, however, so great, especially of those who like most of the females in New England, to their praise be it spoken, are employed in the active duties of their families, that few have leisure to devote to early education of their children, that time and unceasing attention which it requires.

It is by supplying this defect, that Infant Schools promise so

much to the cause of knowledge. Education begins earlier in life than many are willing to believe, and experience shows how rapidly the mental powers of the infant may be developed, and how early the twig may receive its direction to become the future tall, and sturdy, and beautiful tree, or distorted till it becomes irrevocably deformed, misshapen, and, at last, the useless cumberer of the ground.

We may in this connexion see how the success of Lyceums, as well as every other means calculated to diffuse knowledge to each sex and to all classes, may indirectly produce lasting and important benefits to society. Not only should husbands and fathers be intelligent and well informed, but it is even more important, if possible, that wives and mothers should be enlightened and well educated. It is upon them, that the character of each succeeding age in a great measure depends.

It is from impressions which the child receives while in his mother's lap, and the direction which is given to his thoughts, his disposition, and his feelings, while a prattler by her side, more than from any one thing else, that the future character of the man derives its qualities and its hues. Here and there a child is seen springing up with surprising precocity of intellect called *genius*, and that genius, and an inequality of intellectual capacities exist I will not deny ; but in many, I had almost said in most cases, the precocity of the child may be traced to the early care of a mother of superior intellect. Sir William Jones, for instance, might have been, for aught we know, the son of a gay, weak votaress of fashionable life and heartless pleasure. But we cannot conceive how the mother of Sir William Jones could ever have been the mother of a tame, incurious, and grovelling son.

But I need not multiply examples from history. I am willing to appeal to the observation and recollection of every one who hears me, upon this part of my subject. The attempt to cultivate and diffuse a taste for useful knowledge by any system which may be adopted, should begin earlier in life than when habits have been formed, tastes confirmed, and the cares and employments of life have begun to weigh upon the minds and spirits of those upon whom such system is to operate. Mutual instruction should begin by the fireside, in the little family circle that clusters around the mother as she plies her task during the winter's evening, when all is dreary without, and all is cheerful within, and when inquiry should be awakened, and all reasonable curiosity gratified. And if there is a scene upon

which superior intelligences may look down with complacency and pleasure, it is when a father or mother with a purity of purpose and a disinterestedness of affection, which belong only to a parent's heart, are fitting their children to fill an honorable sphere in the world, and to tread the crooked maze of life with usefulness and safety.

Parental instruction should be carried into every situation in life, instead of a child's being left, as is too often the case, to glean a mere pittance of knowledge from schools during the few weeks or days which parents ordinarily afford to their children. It should be carried into the fields, where nature opens her boundless storehouse. It should be communicated in the volumes of history, in the treatises on science, in the books of moral and religious instruction, which should be found in every social library, if not in every family, and which would be found there if a proper spirit and zeal could be diffused through the community.

The establishment and increase of these libraries are by no means the least important of those subjects which associations like these are calculated to encourage and promote. Schools may be at the foundation, but the access to books forms an essential part of the means by which knowledge is to be diffused. We urge this with the more confidence, because the multiplication and cheapness of books at this day, puts it in the power of every neighbourhood to be supplied with one or more libraries. We urge it too because it is a subject in which every one is interested, even if he regards only his personal gratification. To a man who never reads, how many wearisome hours pass over him, even while engaged in the active duties of life, with health, business, and friends to animate and employ him. But when the bustle and excitement of business is over, where old age or sickness have damped the ardor of his hopes, and removed him beyond the influence of the scenes and employments which once occupied his time, or when his early companions have fallen around him, and left him alone in the world, what condition can be less desirable, what state of mind less enviable than his whose taste has never been improved by culture, nor the circle of his knowledge enlarged by reading, who has never learned to hold converse with the mighty dead, nor to draw from the storehouse of nature around him, any of those exhaustless treasures of amusement, which lie open to all who seek for them.

Men toil for wealth as if they were sure candidates for a long life, and yet, in the acquisition of knowledge, of every thing which would make life worth possessing, they act as if to-day was the only moment in the duration of their existence, and they too often find in the loneliness and hypochondria of age, that they have toiled for a bubble that is not worth the effort.

Let no man say he has no time to read. If he would count up the scraps of hours, the portions of days and weeks, which, in the course of a life, might be thus employed without infringing upon his other employments, we believe he would find no man, not even him who toils the daily round of labor for his immediate support : who could urge the want of time as an excuse for neglecting altogether his own education or that of his family. Every one has observed how when men have once acquired a taste for reading, they discover means of gratifying it, and it is not too much to say that the objects of such associations as this would be well nigh accomplished, if this taste could be once diffused through the community. For this end, libraries should be established, and curiosity awakened by means of lectures, discussions, and direct appeals to the ignorant and unreflecting. They should be told of the pleasures and advantages of knowledge to every class. They should learn that it comes home to the business and affairs of life of every one, that it brightens and cheers what would otherwise be the loneliest hour, and gives to the lowliest and humblest, a companionship with the wisest and greatest of every age.

Nor is it alone for personal gratification and individual pleasure, that a taste for learning and the arts should be cultivated and extended. Considerations of a public nature, connected with the glory and honor of national character might be urged upon every citizen under a republican government. Why do we remember Greece, while the nations which flourished around her are forgotten ? Why does the traveller as he pauses on the Acropolis amidst the ruins of a wasted city, feel that he treads on holy ground, and start amidst crumbling temples and broken columns, at the creations of his own fancy ? Why does the light of history gild more brightly the era of Augustus, though the strength and vigor of the Roman character had been tamed and weakened, than upon the days of her stern simplicity of character when victory perched on her standard, and kings were proud of the title of Roman citizen ? It was the never dying lustre which learning and the arts threw over the ages when

they flourished, which consecrated them to glory and immortality. They have even consecrated the Saracen character of one era, and once shed a light over the cities of the East which seemed perhaps more splendid and brilliant from the darkness, the thick, impenetrable darkness which brooded over christian Europe, during the five hundred years in which the sacred flame of learning was cherished and kept alive by the bounty of the Mahometan Caliphs.

In other governments royal bounty, and imperial patronage may give an impulse and life to literature and the arts which may immortalize the potentate and the age. But under a government like ours, the people alone possess the power, and every citizen has, therefore, something at stake to give to the age in which he lives and the nation of which he forms a constituent part, a character which other nations shall respect and after ages venerate.

But it is chiefly in regard to its moral tendency and effect that a diffusion of knowledge becomes important. Fear may restrain from the commission of the grosser crimes, and the punishment which awaits the guilty may keep men from indulging in the grosser vices. But it is to the intelligence of men that motives must be offered, and arguments addressed which have for their object to make men habitually honest, sober, and moral. It is one thing to warn the blindfold traveller that danger awaits him, and a far different one to open to his view the dizzy precipice on which he is standing, and to point out the end and consequences of the course he is pursuing.

It may, indeed, seem hopeless to attempt to eradicate sin and vice from the earth, but much has already been done in correcting the vicious habits and propensities of men in the progress and improvements of society. Crimes and vices which were once committed at noon day, are now unheard of or committed only in the darkness of midnight, or in the secret haunts of infamy and guilt. The diseases which pervade the moral, like those of the natural world, have assumed a milder form and character, and are less wasting and destructive in their consequences than in the earlier history of man. We know not to what this may be ascribed, except a more general diffusion of knowledge, and it seems by no means a visionary anticipation arising from this reflection, that as the world becomes wiser, it will lose more and more of that moral corruption and depravity which seems inseparable from a state ignorance, till public sentiment shall no longer tolerate open vice, although individuals

may still be found who shall secretly indulge in it. This anticipation might be pronounced extravagant, perhaps, if we might not indulge the hope that with the spread of useful and practical knowledge, a spirit favorable to the diffusion of knowledge of a higher character would be proportionately roused to energy and action.

There is a something, it is true, which passes under the garb and name of knowledge, which has been preached in our theatres, and published from the press of late in our country, by a shameless advocate of infidelity, who, regardless of all that the Christian religion has done for her sex in ameliorating their condition, and raising them from slavery and abject degradation to the high rank which they justly hold in the scale of being, would seize, like the strong man of old, the pillars of the temple and bury in one indiscriminate ruin the hopes of the future and the happiness of the present. Let me not, therefore, when I speak of knowledge be supposed to use the term as having any affinity with that cant phrase of modern reformers who would put out the sun at noon day to light the path of erring man by the dim taper of their own creation. I mean such knowledge as has been changing the aspect of human society since the reformation and the invention of printing ; which combines natural reason with moral culture, and human science and discoveries with the truths of revelation.

It is by a diffusion of such knowledge as this that public sentiment becomes a powerful moral engine. We have seen its influence in our own day, stemming and almost stopping the tide of corruption, misery, and death which intemperance was pouring over our land ; we have seen the course of this stream checked and narrowed in its ravages, and many a fair region saved from its desolating power, not by the aid of government, not by the strong arm of civil power, but by the more powerful, the more resistless influence of public sentiment and popular opinion which has been reached and controlled by well directed appeals to the intelligence and reason of the public.

Here is an instance of the influence and moral control which may be obtained over the public mind by a proper diffusion of knowledge ; and where, let me ask, would we seek for a stronger proof of its beneficial results ?

Others may talk of the danger of combinations, and tell of the alarming tendency of associations, where the power of the many may be directed to a single object, when that object may be dangerous in its character. But where can we find any thing to

alarm us in associations which have for their object the diffusion of knowledge ? Their bane would carry more than an antidote with it. It was in the days of ignorance that a Papal Hierarchy rivetted her chains upon the minds and consciences of men, and without a return of the days of ignorance, we need not fear the efforts of clerical or political combinations to trample on the rights, the liberties, or the consciences of men. It is to a general diffusion of knowledge and intelligence that liberty and virtue owe their strongest hold on a community. And it is to aid the cause of these, to promote our own and others' welfare that we are called upon to contribute our efforts to spread useful knowledge around us. Little may perhaps be accomplished by individual exertions, if unaided and unsupported. But if united as the plan if these associations proposes, they become the little rills that form the mighty river which flows on resistless in its course, fertilizing, enriching and scattering plenty to wide and distant regions.

Humble, therefore, though our efforts may be, let them be united and unwavering, and other men and after days may feel, though they may never acknowledge the influence of our exertions in the cause of useful knowledge.

ART. VI.—*Remarks on the Science of Phrenology.*

PHRENOLOGY, is a system of philosophy of the mind, avowed by its advocates to be founded on ascertained facts. It declares that the brain of man is the material instrument by means of which the mind carries on its intercourse with the external world. That it is an aggregate of parts, each of which has a special and determinate function.

We are not among the *enthusiasts* of this newborn science, but are disposed to state some of the reasons which induce us to believe in some of its doctrines. First, then, all certain knowledge in physical science tends to show, not only that every material thing which exists, exists in organic forms, but that each particular part thereof is perfectly organized also, and that their external forms are derived from their internal organization. This internal organization is primarily determined by the use which nature intends to perform thereby. This we believe to

be universally true ; it may be, in some measure, illustrated by the different members of a body politic ; while every member adds strength, and increases the perfection of the whole, every member is at the same time a perfectly organized and independent form, having its own peculiar and distinct vocation, and which in general accords with his genius and power. So of the various and minutest parts of each man, each part has its own specific use to perform, and thereby helps to perfect the whole ; this is precisely true of the brain, in general, and in particular.

The researches of the mineralogist, the botanist, and the physiologist, are daily enriching the mind by discovering the exact adaptation of means to ends in the minutest parts of creation, which the microscope enables them to examine. Is it from these researches that the conclusion is drawn, that the brain of man is the only exception to this general law ? Is that part of our material nature which is the habitation and instrument of those affections and powers which constitute the peculiar perfections of man, and render him an image of his creator, the only example of Chaos which is presented to his contemplation ? We would rather ask, if it is not more rational and more philosophical to suppose the difficulty to be in its not being understood. In the physical forms of the different natures of men, we observe peculiarities as striking as in their mental and moral character ; the same is true in general of the citizens of every community, and of the members of every family. Every skull we meet has as certainly its peculiar form, as its tenant has a peculiar character, each perhaps distinguished by *some* mental qualities, and perhaps as remarkably deficient in others. In the absence, then, of all contrary proof, is it not highly rational to suppose, either that both are effects of the same cause, or that they are related as cause and effect, to discover by observation and induction, the nature of this relation between the external form of the brain, and the mental qualities and powers of men, is the business and object of the science of Phrenology. Some *facts* fixing the *location* of some of the faculties of the mind, are so abundantly attested by repeated observation, as to cease to be subjects of dispute with those who are acquainted with the evidence on which they rest. The subject is in our estimation an interesting one, and one which in its details opens an unmeasured field for daily observation, for curious and philosophical research, and for ourselves, we should be glad to see it one of more general in-

quity. Every accession of established truth helps immediately or mediately in the discovery of more truth ; it tends to enlighten and to elevate the mind, and to illumine the path of duty, and while we believe that in the progress of knowledge, and the descent of truth, that every part of the brain which is now viewed as a particular, will be seen to be a general, unfolding within itself innumerable particulars. Yet can we never fully understand how beautifully and how wonderfully we are formed.

ART. VII.—*Popular Education in Kentucky.*—*An Introductory Lecture, delivered before the Lexington Mechanic's Institute, June 20, 1829. By Rev. BENJAMIN O. PEERS. Published at the request of the Board of Managers. Transylvania Press. 1829. pp. 32.*

‘THE topic assigned as the subject of the present Lecture, by the Association at whose request I appear before you, is, the object, plan, and history of Mechanic’s Institutes.

‘These, as the name imports, are associations consisting principally of mechanics, united together for the purpose of literary improvement in general, but particularly for acquiring a knowledge of those philosophical principles which are receiving constant illustration in the practical operations of the arts.

‘The time has been in the history of our forefathers, and that less remote too than might be imagined, when the mechanic was looked upon to be as really a machine as any constructed by his skill, when such societies as those we are about to describe would have been suppressed by law, and when in fact by royal statute, mechanics were forbidden to send their children to school.

‘But a new era has dawned upon the world and the English language is not now made the instrument of opposition to the cause of *universal* education, excepting as it is occasionally used to give expression to the sullen but expiring mutterings of that spirit of ecclesiastical and political misrule which dreads knowledge upon the principle of “hating and avoiding the light because its deeds are evil.”

‘So complete has been the revolution on this subject that it is scarcely to be credited, that under date of 1825, the follow-

ing language should have been addressed to the greatest living champion of popular improvement. "We can," (says a minion of royalty) "regard this scheme only as the baseless fabric of a vision, *happily* quite beyond any man's power to accomplish on a large and permanent scale but calculated so far as it can be accomplished, to *alarm* all sober and prudent persons among the middle and *upper* orders of society and to render the laboring classes *uneasy, unhappy, and dissatisfied.*"

'A kindred spirit under a still more recent date makes the following observations in opposition to this "*baneful* project." "Suppose (says he) that some friend to humanity were to attempt to improve the condition of *the beasts* of the field; to teach the horse his power, and the cow her value; would *he* be that tractable and useful animal he is, and would *she* be so profuse of her treasures to a helpless child?—Could any thing be more impolitic? Yet there is not, that I know of, any express law against it, nor would it be one jot more ridiculous than teaching tailors and cobblers 'the beautiful system of Geometry.' "

'It were superfluous to tell you that such sentiments have never disgraced the American press. The broad bosom of the Atlantic spreads itself out between us and the land in which the tongue or pen of man dares utter them, and I make these extracts at the present time only to show what cause we have to love still more the country of our birth, and to heighten our gratitude to that Almighty Being whose kind Providence has made it our lot to live under a system of government whose policy it is to encourage to the utmost, rather than depress the diffusion of intelligence.

'In this land of freedom the mind as well as the body is unfettered; the fountain of knowledge is open to all, and whosoever will may drink at it.

'Of the ample provision made by some of the members of our Republic for the education of the young, we have long been accustomed to boast, and not without reason; but it is only of late years that the idea seems to have been started, that a system of instruction adapted only to the incipient period of life, and embracing at most only one fourth of our inhabitants, is obviously partial and incomplete as a system of national education.

'The utmost that can be accomplished at a primary school (the only school through which a majority of society pass,) in the way of mental culture, is to excite a thirst for knowledge, to impart a small amount of elementary information, and to es-

tablish habits of research which will enable the individual to raise for himself in after life, a superstructure on the foundation laid for him by others in his youth. To supply this defect in our system of national education, Mechanic's Institutes and Lyceums have been established, which besides attending to the instruction of the young, provide for the mutual and self-improvement of adults, of both sexes and of all ages and classes indiscriminately. The arrangements made for effecting these objects in such associations generally, are very similar to those which have been adopted by the institution recently established in our town, a detailed account of which, (as we know it will be expected,) will be given on the present occasion. The Mechanic's Institute of Lexington has been in existence but a few weeks. At the meeting on which the Constitution was adopted, a Board of Managers was appointed consisting of nine persons, two thirds of whom must be mechanics, to whose discretion is entrusted the management of the principal affairs of the Society. The Society meets only once in three months to receive the report of the Managers and to transact such business as does not come within their province.

'The Board itself meets weekly, and if the punctuality, the spirit, and harmony which prevail at its sittings can be looked upon as ominous of the success of our institution; truly its prospects are of the most flattering character.

'One of the first steps of the Board of Managers was to provide a Library, the delivery of Public Lectures, and an Apprentices' School, all of which have been in whole or partially effected. The nucleus of a Library has been formed, a course of Lectures for three months, in which two members of the College Faculty and three members of the Medical Faculty of Transylvania University have promised to participate, may be considered as commencing with to-day, to be continued every Thursday evening in this place; and a very promising School for young mechanics, whether apprentices, journeymen, or masters, has been in operation for a week, and will be continued every Tuesday and Friday evening under the instruction of four or five gentlemen who have volunteered their services for this purpose. To be admitted a member of the Mechanic's Institute, application must be made to the Board of Managers. The terms of membership are the payment of one dollar on subscribing the Constitution, and of two dollars as an annual contribution to be collected quarterly. The fee for tuition in the School is one dollar per quarter.

‘The members of the Institute have the use of the Library and the privilege of attending the Lectures with their families and apprentices, without additional expense ; to all others a separate charge will be made for each. In addition to these provisions the Board of Managers design as soon as practicable to lay the foundation of the cabinets of Models and Minerals contemplated by the Constitution.’

‘In bringing these remarks upon this part of the subject to a conclusion I would ask, whether our conduct evinces that the people of Kentucky are sufficiently impressed with the importance of popular education. The question is one of immediate and vital interest to us all ; it is appropriate to the occasion and the audience, and I will give it an honest answer by saying, it does not. Why else is it, that one half or four hundred of the children of the town in which we live, the most eminent in the western country for its literary privileges, are not to be found at school ? I speak from actual investigation. The corporation of Louisville, have within a few weeks past voted \$1500 a year for the payment of Teachers in a Public Free School, besides \$400 for the purchase of Apparatus, and \$150 to defray the expenses of the Superintendent whilst visiting the Monitorial Schools of New York. What does this example speak to us ? Our Board of Trustees are exemplary for their liberal attentions to the streets and other public objects in our town, and would not the people bear it that part of the money thus expended to accommodate the soles of their feet, or even an additional sum should be bestowed for improving the minds of their children, and educating the swarms of little outcasts that infest our streets.’

‘There is now and has been for twenty years, a standing law appropriating 6000 acres of land to the establishment of one academy in every county. But what has been done for the introduction and maintenance of a system of common schools ? in other words for the education of the great mass of the people ?

‘In 1822 a promising excitement prevailed upon this subject. One half the profits of the Commonwealth’s Bank, estimated at \$60,000 per annum, was set apart as a public school fund. A committee was appointed to prepare and report to the next Legislature a plan for common schools. This committee sent out their circulars to all parts of the Union. Our liberality was applauded abroad, our hopes and expectations were high, at home ; but what has been the result ? The re-

port was written and presented, it is true, but was never heard of afterwards. And what has become of the fund which by this time, had it been managed with ordinary wisdom or even fidelity, would have exceeded half a million of dollars ? It has dwindled down to \$150,000. Where is the remainder ? It has gone to make up the deficiencies of the revenue. By what right has it been thus diverted ? I leave this for our Legislators to answer. One thing I will assert however, that it is a question which they ought to be called upon to answer, and that speedily, otherwise it may be too late. The deficiency in the revenue for the current year will be upwards of \$80,000, and if this is to be made up from the school fund, in two years this fund will be annihilated.'

'As to the education of teachers, it is believed that it is not necessary to wait until a splendid fund can be spared for the establishment of a seminary for this purpose. It has been ascertained that there are many, perhaps a sufficient number of young men in the country, who would embark in the business of instruction, as a profession, if they were assisted by the State or societies to obtain the necessary education. The School Bill introduced into the Senate last winter estimates our present school fund at \$150,000. Now admitting that our eastern brethren with the very best opportunity of judging, do not attach too much importance to this matter, could a part of the interest of this sum be expended with a greater benefit to the State, than by assisting, say one young man at least from each county, to qualify himself at some of our colleges for the business of teaching ? To give or loan even \$50 a year to every such young man would educate one hundred for five thousand dollars.

'Would not the State be remunerated too for the expense of maintaining a *qualified* superintendant, who might render essential service to existing schools and teachers, by making himself acquainted with the best school books and the best methods of instruction, thus contributing to give uniformity to education ; and who in addition to this might act as general agent to secure various grants of land to seminaries which have not as yet been appropriated ?'

ART. VIII. *Letters of Pestalozzi on the Education of Infancy.**(Continued from p. 432.)*

LETTER VII.

IN my last letter I endeavoured to show the degree of importance which every mother attaches to that period, when, for the first time, the regards of her child meet her own, and the expression of love which fills her own countenance gives birth to a similar expression upon the features of her child.

This fact, which a mother never looks upon without experiencing a sentiment of happiness inconceivable to every other person, conducts her towards a series of considerations which she can never repent having justly appreciated, and through which I am going to try to follow her.

At the first view a great truth comes to strike her mind. It is, that gentleness and the manifestation of maternal love have produced the first apparent impression upon the look and the features of her child. Experience will not be slow in justifying the sentiment which makes her recognize in this impression the influence of her individual conduct upon the mind and heart of the being that owes to her its life.

Let her never lose sight of this fact. Providence, in ordaining that the order of nature should be thus, has given for her guidance a truth competent to conduct her towards the desired end, and to become for her an infallible principle of education. In the formation of the character as well as in the mode of transmitting knowledge, kindness will be the first and most powerful of means. Fear can do much without doubt, and there are still other means which may be employed with some appearance of success ; but in order to speak to the mind and to form the heart, nothing is more constantly efficacious than affection : it is the most easy road for arriving at the greatest results.

This fact of which I have been speaking, I have called a manifestation of *spiritual* nature in man ; and as such, it ought to engage the mother to consider under a new point of view her relations to her child.

This child is endowed like her with intellectual faculties ; faculties much superior to animal life, and in a great measure independent of its laws. The less they are developed at the period of which we are speaking, the more of attention and care they require.

Providence has given to the mother all the means of satisfying the physical wants of her child ; we have seen also that the child, on his part, is endowed with an animal instinct, which singularly facilitates the task of the mother: but when the regards of the one meet the regards of the other, it is not merely to seek the satisfaction of a present want, or the solace of a present feeling of uneasiness ; they do still more, they express the first want of intellectual nature and especially sympathy.

Animal instinct is a principle whose most important purpose is the preservation of the individual ; it is towards this end that its first efforts are directed, and in the course of its successive developments it is always *I* that is the centre of its action.

It is not so with the mind and the affections of the soul ; for nothing more incontestibly demonstrates the intellectual nature of man, than this kind of self denial which leads us to sacrifice our enjoyments and our happiness to the pleasure of others, and to make our own personal desires yield preference to more noble views.

A philosopher has said that whenever the mind inclines to future and invisible objects in preference to objects visible and present, the soul manifests its rights.

If we apply this observation to the preceding remarks, we shall be able to deduce therefrom principles and rules, in virtue of which the mother will, without devoting herself to laborious researches, be capable of ably promoting the great interests of her child, and of contributing to the improvement of the noblest part of his nature.

Animal instinct, I have said, always attentive to what may contribute to the well-being of the individual, disdains whatever relates to the satisfaction or the interests of others.

So long as the other faculties still sleep, the action of this instinct and the exclusive influence it exerts over the child, cannot be regarded as vicious. As yet there is no conscience in him ; and although selfish in appearance, he is not permanently so. It even seems that the Creator has given him this power, which thus gives him the advantage over every thing, only while conscience and the other faculties cannot contribute to secure the first element of animal life, preservation.

But after the manifestation of these principles in a more elevated order, if this instinct is permitted to act as formerly without regulation and without restraint, it will then begin to put itself in opposition to conscience ; and the culpable indul-

gence which is practised towards it, will only serve to develop selfishness at the expense of the best and most amiable qualities.

I desire that this may be well understood, and I shall perhaps succeed better by explaining the rules of conduct which flow from this principle, than by delaying longer upon abstractions.

And first, it is necessary that the mother, for the purpose of preserving any order, any regularity, in the cares which she bestows upon her child, should constantly persevere in the good principles which she has adopted : it is necessary that she should never depart from the path marked out for her ; that she should never neglect to satisfy the wants of the child when they are real, and that she forbid herself the dangerous indulgence of wants which are imaginary or which are expressed only with importunity. The more promptly and constantly she shall adhere to these principles, the greater and more durable also will be the advantages which she will obtain for her child.

Let these means be employed with perseverance, and in a short time one will recognize how prompt and efficacious is their action. Their first advantage will be in favor of the mother. She will be exposed to interruptions less frequent, and will be less tempted to yield to excitements of bad humor ; and though her patience may often be put to the proof, her mind will be able to secure itself against every species of irritation. She will necessarily find a real satisfaction in her relations to her child, and will recollect that she is a mother less by the sensibility to her duties than by the charm of her enjoyments.

However, it is the child that is to derive the greatest advantages from this plan of conduct.

Experience will soon teach mothers the benefits of such a system, and the fatal consequences of a contrary proceeding. In the first case, the wants of the child are few and easily satisfied, a certain proof of excellent health ; in the second, the rules which were here proposed are neglected ; and if, in order to shun every thing that looks like severity, a mother yields to an indulgence without bounds, she will soon perceive that with good intentions she has followed a false and dangerous road ; and still more, her weakness will become a source of discontents and of pains for her, without being a subject of satisfaction for her child ; and she will have sacrificed her repose, without doing any thing to secure the happiness of him who is so dear to her.

Let mothers, who have had the misfortune to fall into so cruel a mistake, tell us if they have not had frequent occasion to repent of their fatal indulgence ; if, indeed, by a still greater misfortune, this indulgence has not given place to a culpable indifference, or a fatal abandonment of her duties. Let children themselves, who have been brought up in excessive indulgence, tell us if they have not experienced the cruel consequences ; let them tell us if, in spite of all the means used to kindle their courage, they have ever enjoyed that health, that calmness, and equality of humor, which are the first elements of durable pleasure and happiness.

Yes, let them tell us if such a system is calculated to inspire them with a taste for the innocent pleasures and amiable sports of infancy ; if, in youth, it gives them the strength necessary for resisting the passions, or for kindling in them a noble enthusiasm ; and if, having become men, they can find in it that germ of courage and vigor which is to crown their efforts with success.

We are not all born to be philosophers, but we all aspire to enjoy the best possible state, both of soul and body ; and in order to arrive at this happy result, it is necessary *to desire little, and to be content with still less.*

PESTALOZZI.

LETTER VIII.

THE morals of the child ought especially to derive great advantages from a good system of education, and do not think that in speaking thus I lose sight of the state of the earliest infancy. I know that the being of which I speak is not yet provided with reason ; and it is in vain to endeavour to give him an idea of the just and the unjust,—principles upon which rest, not only our duties as individuals, but also the edifice of our social system. If then some persons may regard my opinions on this subject as the reveries of a visionary, let them know that I am ready to abandon them as soon as I shall have been convinced of their erroneousness by experience.

Until then, let me be permitted to maintain that aid and encouragement cannot be too early given to what there is most noble in the nature of the child, to the end that he may be able to struggle successfully against the progressive action of the animal instinct.

This action, indeed, manifests itself more and more every day ; and far from confining itself to the first efforts which had for their object the preservation of the individual, it extends and develops itself farther and farther. Its very force and violence form a striking contrast with the feebleness of the physical faculties. See the child seize with avidity upon the objects which present themselves to him ; all that excites his curiosity calls forth his desires ; and the inconceivable obstinacy of this want is always in proportion to the obstacles which hinder the child from gratifying it.

Thus all that there is in him unpleasant and disagreeable, attaches itself in one way or another to the action of this animal instinct ; and if we consider the child with his desires and his impatience, we cannot but recognise that he exhibits the image of man fallen into a burst of passions.

I know that it is the custom to say that passion ought to yield to the principles of a sound morality, and that our desires should be regulated by reason ; but the first infancy is an age when we cannot have recourse to any of these means, and it is then also that Providence has compensated them by an agent still more powerful, I mean *maternal love*.

The only influence to which the heart is accessible for a long time before the mind can appreciate it, is that of affection. Now, who is better fitted than a mother to captivate the affection of the child, during the first period of his life.

Where I read in the works of a distinguished writer *that fear and a sort of religious terror are the best means of gaining authority over the minds of children, an authority which afterwards affection and friendship cannot fail to maintain*, it is impossible for me to conceive otherwise than that an unfortunate mistake alone has prompted this writer to utter an opinion entirely opposed to the enlightened sentiments to be found in many of his writings.

For, supposing even that this means was as powerful and as advantageous as it appears to me useless and fatal, I do not see how it would be possible to put it in practice in the age now in question.

Fear supposes the power of appreciating the consequences of an action or event, and implies also the consciousness of causality ; and causality in its turn presupposes the faculty of observing, of comparing, of combining a great number of facts, and of deducing therefrom a kind of conclusion.

Truly, the able writer, whom I have quoted, cannot have at-

tibuted to the child a course of reasoning so complicated and so foreign to the state of his intellectual faculties. *Fear* is then a means which must be renounced, not only because it is a motive of action unworthy of human nature, but also because it cannot be applied in the first and most important periods of life.

By what we have called a sort of *religious terror* must be understood a vague and confused impression, which throws a veil as it were over the mind, and which, whilst it acts exclusively upon the imagination and the nervous system, remains wholly foreign to reasoning, and is incapable of giving any impulse whatever to our faculties. Or, indeed, we may consider this sentiment as originating in the conviction of the moral superiority of another,—a conviction which takes possession of the mind and leads the soul to consider only with a profound veneration objects which the understanding cannot embrace, or to follow blindly the precepts which have received the sanction of infinite wisdom.

This sort of terror, in the first signification which we have given to it, has indeed a certain affinity with the first sensations of the child ; but it depends then upon a sentiment of weakness, or an accidental uneasiness ; thenceforth it ought to be considered as a physical phenomenon, and consequently as little suitable to be employed in moral education. Besides, it cannot serve as a motive, since from its nature it is only a transitory sensation, and cannot constitute the basis of a solid plan of conduct, much less form and regulate the moral habits.

In the second sense of the words, 'religious terror' supposes many ideas to which the child is, and will yet be long a stranger. How can moral dignity be appreciated where the consciousness of moral force has not yet manifested itself.

PESTALOZZI.

LETTER IX.

THE reasons which I have set forth in my last letter authorize me to conclude that, in the education of infancy, maternal love is the most powerful of all agents, as affection is the first of all motives.

The mother cannot, therefore, exercise too much care, too many precautions, in the first exercise of her authority. Un-

der this point of view, each of her acts must be approved at once by her conscience and her experience. She ought not to forget what an imposing responsibility weighs upon her, and how important may be the consequences of her conduct to the future happiness of the child. She will not be slow then to perceive that the only means of judging correctly of the nature of her authority consists in considering it rather as a duty than as a prerogative, and in never thinking it absolute.

If the child remains quiet, if he shows neither impatience nor uneasiness, believe that it is through love for his mother. Now it is of the greatest importance to mark the difference between the action which is determined by the fear of authority, and the conduct which affection is the only principle.

The first comes from reasoning, the second has its cause in the heart ; and we may renounce the one where the motives which produced it have ceased to exist ; but the other must be permanent, for it does not depend upon circumstances or accidental considerations, since it is founded upon a principle moral and durable.

Thus the conduct of the child which answers to the hopes of its mother, offers at first a proof of affection, and afterwards a proof of confidence.

A proof of affection ; for the first, the most innocent of the desires which manifest themselves in the child, is that of pleasing its mother ; and if it is doubted that such a desire can exist in the heart of a being yet so little developed, I shall answer as on almost all occasions by an appeal to the experience of mothers.

I have spoken of confidence ; but if the child has been neglected ; if all the necessary attention has not been paid to his wants ; if, instead of finding the smile of kindness upon the countenance of those who approach him, he has always perceived only the expression of repulsive severity, it will not be easy to bring him back to that sweet and happy disposition which will allow him to wait for the satisfaction of his desires without impatience, or to enjoy it without avidity.

Thus, when affection and confidence have once taken place in the heart of a child, it is the mother's duty to do every thing in her power to encourage, to fortify, and to ennoble this principle. Without this, the sweet, but still feeble emotions will by degrees grow weaker ; those cords to which sympathy will not give a salutary movement, will cease to vibrate and will no longer give a sound. Now confidence springs from confidence, and affection cannot be maintained but by affection ; be not

therefore deceived ; the mind of the child tends always to put itself in unison with the minds of those who surround it.

It is necessary also to seek to fortify this moral principle which nature has placed in the heart of the child, and for this I know of but one means, it is *practice*. The same effort constantly renewed becomes less difficult, and it is the nature of things that a power, whether physical or moral, will perform certain functions with so much the more assurance and success, as these functions have become more familiar by habit. The first care then of the mother should be to give the greatest heed that her own manners and treatment should be constantly calculated to bring forth the affection and to cultivate the confidence of the child. She should not give herself up for an instant to bad humor or ennui, for it is impossible to say how powerfully the child is affected by circumstances even the least important. Without doubt it is not capable of appreciating the motives or of foreseeing the consequences of an action ; preserving of the past only a general and almost confused impression, it is far from having the consciousness of the future ; but it is for this that the present acts upon him with more force, whether in making him feel the weight of a lively pain, or in offering to him the charm of the more agreeable emotions. If the mother will give close attention to this she will be able to spare the child these painful impressions, which, though they by no means perhaps present themselves to her recollection with the transitory circumstances which produced them, may nevertheless leave a cloud upon the mind and weaken a sentiment which it is the duty and interest of mothers to cherish without ceasing.

But it is not enough to have encouraged and fortified this sentiment, it is necessary to seek still to elevate its nature.

Indeed, let not the mother content herself with the successes which the rectitude of her intentions, and perhaps also the dispositions or character of her child, may have rendered more easy ; but let her remember that, far from being a uniform, and as it were a mechanical process, education should become a source of gradual and progressive improvement. Let her be equally on her guard both against the security which success gives birth to, and against the discouragements which difficulties may produce. She should not forget what are the ultimate ends of education, but hold herself ready to take part in the great work, of which in her quality of mother she should also hasten the accomplishment ; I mean the elevation of the moral nature of man.

PESTALOZZI.

ART. IX.—*Principles of Borrowing and Banking.* By E. LORD. New York. 12mo. pp. 132.

To facilitate the convenient interchange of the necessities and luxuries of life, something is needed to represent their value. Whatever answers this end may be called money or the circulating medium,—it is of no importance what this is, or whether it be such from its inherent quality, or from its representative character, provided it answers fully this end. Paper would be equally as good, and often better than gold or silver if equally safe ; but this is not generally the case, from the greater facility it affords to fraudulent designs. Gold and silver moreover has the advantage of being a circulating medium which is acknowledged by all nations. Paper, on the other hand, affords in some respects much greater conveniences, and is cheaper to provide—indeed paper money in some shape could hardly be dispensed with. Bank notes would be like the notes of individuals, but for their security being better known ; and bankers frequently do, though not often in country, issue their own promissory notes which circulate as money. So much as paper is prepared for circulation, cheaper than the metals are coined for this use, is a clear saving to the community provided the paper affords equal security to the holder. This it generally does not and perhaps cannot, but the greater conveniences it affords in some other respects is more than sufficient to overbalance this : for all the uses for which the metals are equally convenient, we think them clearly preferable to paper ; but this must be a small part of the whole use of a circulating medium ; the truth probably is that the actual wants of the community require both. We are inclined to the opinion, however, that it would be a salutary regulation to forbid the issue of any bills of a less denomination than five dollars, the effect would be to retain a much larger amount of gold and silver in the community and enable the circulating medium better to sustain its equilibrium amid the fluctuations to which it is incident in consequence of the metals being articles of merchandize.

In a paper currency, then, there is greater convenience and greater economy than in the use of gold and silver—all that is wanting is to make it equally secure—to effect this, is in our estimation, all the regulation which banking requires. To this end Mr Lord proposes :

‘ The modifications of the banking system to be proposed and recommended for adoption, may be briefly described as requiring *the capitals of banks to be invested in permanent securities, and their credit alone, founded on the known amount and condition of their capitals, to be employed in the operations of discount to an extent not exceeding in any instance the amount of capital invested.*

‘ In the administration of such banks, it is believed that the distinctive provisions of *investment of the capital and limitation of issues*, would operate as inherent and effectual restraints against undue emissions of paper.

‘ Banks with their capitals invested in this manner, were they subject to no limitation of issues, would be incapable of extending their emissions as much as may be done on the existing system ; for it is obvious that after going as far as possible on their credit, they might issue the whole amount of their capital also.’ pp. 72–76.

In Scotland, where there are between two and three hundred banks, their capitals are secured by landed property, and in fifty years it is said that only six suspended payment, of which in two only were any deficiencies, and in both these not exceeding thirty thousand pounds.—To make it certain that all the bills issued are sure of being paid, is all the regulation that is necessary ; and this we consider one of the most important duties of government. Suffer this to be done, and it is of no consequence how many banks exist or what their capital or amount of their issues ; indeed under such circumstances the more money in circulation the better, it would only afford the greater evidence of a healthy and prosperous state of the trade of the community. The limited ability of every individual to command these issues, is the only limitation to which it ought to be subject. Banks indeed might then have their petty quarrels as they do now, the city might be arrayed against the country and the country against the city ; but the public would be more sceptical of the fallacious and ridiculous idea that their object or tendency is to promote the public welfare ; as a general rule all combinations for purposes of controul are adverse to the public good. The relative value of money admits of no arbitrary regulation nor needs any ; it is susceptible more or less to every influence which effects property or trade ; which is just as it should be. The only essential regulation is to make it unquestionably safe to the holder, which is effected not by limiting the amount of issues, but by providing suitable conditions of issuing at all.

This done, and the nature of the case will afford remedies exactly commensurate with all other difficulties.

‘The object of all conventional regulations of the currency, should be to secure an adherence to the principles which naturally govern it. For though the operation of these principles can no more be superseded or hindered permanently, than that of any of the laws of nature can be, yet they may be temporarily violated and resisted ; and by a constant effort to evade or oppose them, the most ruinous consequences may be produced : especially where a joint currency of metal and paper is in use, and where paper is issued, not by a controlling power like that which regulates the coin, but from a multitude of subordinate sources.’ pp. 43, 44.

But our legislators and financiers instead of observing and guarding the natural law, fancy they can devise a better, and appear to think that to limit the number of banks on the present system, is to regulate the currency when it does not in fact touch the point of difficulty.

These remarks are made in a cursory and hasty manner, partly with the view of recommending the work of Mr Lord to those interested in the subject, though it contains some doctrines in which we do not entirely agree with the author.

NOTICES.

At the present day so abundant and so varied as are the productions of the press, it can hardly be expected of the conductors of a public journal to notice all the books which may be placed upon their table, while a few of them are likely to be assigned to some of the ‘editorial phalanx,’ for formal direction, that their beauties and their deformities may be pointed out, others equally deserving that honor are likely to remain unnoticed ; but as the present number of our work terminates the volume for this year, and we have a few pages yet to *fill up*, we shall in the present notice dispose, in a very brief manner, of some until now of this latter class.

Familiar Lectures on Botany, including Practical and Elementary Botany, with Generic and Specific Descriptions of the most common Native and Foreign Plants, and a Vocabulary of

Botanical Terms, for the Use of Higher Schools and Academies. By Mrs Almira H. Lincoln, Vice-Principal of Troy Female Seminary. Hartford. H. and F. J. Huntington. 1829. 12mo. pp. 340.

Former numbers of this Journal bear testimony how interesting and how appropriate we consider this delightful study for youth of both sexes, and for mature minds. Of the peculiarities of the volume before us we shall endeavour to give our readers some idea in the author's own words.

‘It has been customary among botanical writers, to consider under separate heads, the physiology, anatomy, and classification of plants. This division, although proper in minute investigations upon physiology and anatomy, seems not well adapted for a school book. I have not therefore attempted to keep the departments separate.’ ‘The work is larger than I had at first designed; it may be urged, that remarks are introduced not strictly connected with the subject, and that the substance of the book might be much condensed. In answer to this objection, I would remark, that from experience in teaching others, and from observation of the operations of my own mind, I am led to believe that books most remarkable for a concise style, are not the most favorable for the developement of the mind. If a book is to be committed to memory, every word, member of a sentence, or idea, not absolutely essential, should be excluded; but this fact with regard to education seems now to be generally understood, that the memory may be burdened without improving the other intellectual faculties, and that the best method of teaching, is that which tends most to develope, fertilize, and strengthen the mind.

‘A small text book, in a dry, concise style, may answer very well where a teacher has leisure and ability to amplify and explain; thus supplying to the pupils the want of an interesting book: yet with all this labor on the part of a teacher, a book containing interesting illustrations, would be desirable. But many teachers have neither the time, nor the confidence in themselves, to attempt to enlarge or illustrate: considering their duty as terminating in a faithful explanation of the book from which their pupils study.’

The drawings, as the author declares, were made expressly for the work. They appear to us to be selected with judgment and executed well. The illustrations are interesting and pertinent, and at the end is to be found an accented vocabulary of botanical terms. From the slight examination we have been able to give the volume we incline to think it a valuable addition

to the elementary works on the subject of Botany. We give the following extract as an illustration of the author's style and manner of treating her subject.

' CLASS VI—HEXANDRIA, AND CLASS VII—HEPTANDRIA.

' You have already been made acquainted with the lily, as it was one of the first flowers you were taught to analyze ; and in a brief view of the liliaceous flowers, you have been presented with the most striking characters belonging to this family, which we might, following the example of great names, call an " illustrious " race. Pliny says, the " Lily is next in nobility to the rose." Linnæus called them the "*Nobles* of the vegetable kingdom ;" he also called the palm trees "*Princes* of India : " but in our republican country, where aristocratic distinctions are little regarded, we will not attempt to introduce these titles of nobility among the flowers.

' In the class Hexandria, the symmetrical ratio between the number of stamens and the divisions of the other parts of the flower, is generally to be found. In the spider's-wort, (*Tradescantia*,) which has 6 stamens, we find the corolla 3 petalled, calyx 3 leaved, and capsules 3 celled. In the third class, which has 3 stamens, the divisions are often 6.

' In the lily, which has 6 stamens, there are 6 petals, 3 of these are exterior, 3 interior ; the capsule is 3 sided, with 3 cells, and 3 valves ; the seeds are arranged in 6 rows. This proportion of numbers seems to forbid the idea that this plant grew up merely by chance, without the agency of any designing mind. We are not to expect always to see the same symmetry in plants as has been here remarked. It is in the natural as in the moral world, that although every where around us we see such proofs of order and system as would manifest the superintending care of one Almighty Being ; yet there are irregularities which we cannot comprehend ; but although we may admire the *order*, we are not to say that even what seems *disorder*, is formed without a plan.'

At the end we notice the following directions for taking impressions from leaves.

' Hold oiled paper over the smoke of a lamp until it becomes darkened ; to this paper apply the leaf, having previously warmed it between the hands, that it may be pliant. Place the lower surface of the leaf upon the blackened paper, that the numerous veins which run through its extent, and which are so prominent on this side, may receive from the paper a portion of the smoke. Press the leaf upon the paper, by placing upon it some thin paper and rubbing the fingers gently over it, so that every part of

the leaf may come in contact with the sooted oil paper. Then remove the leaf, and place the sooted side upon clean white paper, pressing it gently as before; upon removing the leaf, the paper will present a delicate and perfect outline, together with an accurate exhibition of the veins which extend in every direction through it, more correct and beautiful than the finest drawing.'

Elements of Physics, or Natural Philosophy, General and Medical, explained independently of Technical Mathematics, and containing New Disquisitions and Practical Suggestions. By Neil Arnott, M. D., of the Royal College of Physicians. First American from the Third English Edition, with Additions, by Isaac Hays, A. M., M. D., &c. Philadelphia. Carey, Lea, & Carey. 1829. 8vo. pp. 582.

A knowledge of the laws of nature, is, in our estimation, true intellectual wealth, the essentials of true learning; it is knowledge which forms an important part of that education, which is commenced in time, but which eternity will be found too short to finish. To understand natural philosophy is to understand the laws by which the Divine Being governs the ultimates of creation, and which will probably *ever* constitute in the mind the elements or ultimates of scientific knowledge. It leads to an understanding of those principles, or laws of creation and preservation, which are in themselves universal, and eternal, though their operation may be different under different circumstances and in different stages of existence.

Considering education in this *very liberal* sense, the study of geography, history, &c. is *comparatively* local and unimportant. With these views we earnestly recommend the study of natural philosophy. It affords, in its various departments, nourishment and appropriate exercise for almost every faculty with which the mind is endowed, and we consider it a favorable omen to see so many new works appearing on the subject. A chief object in the present notice is to introduce a few extracts from the work of Dr Arnott which we deem pertinent to our work and which nearly accord with our views.

'The greatest sum of knowledge acquired with the least trouble, is that which comes with the study of the few simple truths of physics. To the man who understands these, very many phenomena, which to the uninformed appear prodigies, are only beautiful illustrations of his fundamental knowledge,—and this he carries about with him, not as an oppressive weight, but as a charm supporting the weight of other knowledge, and enabling him to add to his valuable store every new fact of consequence which may offer itself. With such a principle of arrangement, his information instead of resembling loose stones or rubbish thrown together in confusion, becomes a noble edifice, of correct

proportions and firm contexture, which is acquiring greater strength and consistency, with the experience of every succeeding day. It has been a common prejudice, that persons thus instructed in general laws had their attention too much divided, and could know nothing perfectly. 'The very reverse, however, is true; for general knowledge renders all particular knowledge more clear and precise. 'The ignorant man may be said to have charged his hundred hooks of knowledge, to use a rough simile, with single objects, while the informed man makes each support a long chain, to which thousands of kindred and useful things are attached. 'The laws of philosophy may be compared to keys which give admission to the most delightful gardens that fancy can picture; or to a magic power, which unveils the face of the universe, and discloses endless charms of which ignorance never dreams. 'The informed man, in the world, may be said to be always surrounded by what is known and friendly to him, while the ignorant man is as one in a land of strangers and enemies. A man may read a thousand volumes of ordinary books as agreeable pastime, leaving vague impressions; but he who studies the *book of nature*, converts the great universe into a simple and sublime history, which tells of God, and may worthily occupy his attention to the end of his days.'

'Reverting to the importance of Natural Philosophy as a general study, it may be remarked, that there is no occupation which so much strengthens and quickens the judgment. This praise has usually been bestowed on mathematics; yet a knowledge of abstract mathematics existed with all the absurdities of the dark ages; but a familiarity with Natural Philosophy, which comprehends mathematics, and gives tangible and pleasing illustrations of the abstract truths, seems incompatible with any gross absurdity. A man whose mental faculties have been sharpened by acquaintance with these exact sciences, in their combination, and who has been engaged, therefore in contemplating *real relations*, is more likely to discover truth in other questions, and can better defend himself against sophistry of every kind.

Lessons in Greek Parsing, or Outlines of the Greek Grammar, divided into short portions, and illustrated by appropriate Exercises in Parsing. By Chauncey A. Goodrich. New Haven. Durrie & Peck. 18mo. pp. 129.

This little volume is intended for a book of first lessons in Greek. The author's plan is to teach the elements of the language by progressive exercises in parsing, attended by such statements and illustrations as to embody, in successive portions, the substance of an introductory treatise on Greek grammar. The prominent advantages of this method would seem to be these; the memory is addressed through the medium of the understand-

ing; the intellect is kept in constant activity; and the knowledge acquired is made the result of the student's own observation and experience.

'The Greek Grammar is divided into short portions, to each of which is attached a reading lesson, containing such words only as belong to that portion, or to others which have been previously gone over. In the first declension, for example, the *paradigm* of the first declension is followed by exercises which contain nouns of *that declension alone*.' 'In the second lesson, the learner is made acquainted with the forms of the second declension; which are then illustrated and impressed on the memory by examples from that declension.' 'In Part Second, the pupil enters on the Baryton verb, and is expected to learn a single tense only at a time, and then to impress that tense on his memory by exercises in parsing.' 'At proper intervals the process is inverted, and exercises are given in turning English into Greek. The work contains about the same quantity of Greek in the reading lessons as the Greek Delectus, together with a complete outline of the grammar, and exercises in the making of Greek.'

In the execution of his plan, the author of this work seems to have been peculiarly successful. Minuteness and fidelity in detail are evident throughout the work; and the exercises are carefully proportioned to the pupil's ability, while they make adequate demands on his diligence and application. We would earnestly recommend this volume to all who are engaged in the instruction of young pupils; and we would suggest it as a work excellently adapted for use in female schools, whether with a view to the acquisition of an elementary knowledge of the Greek language (as essential to a right understanding of the meanings of words, especially terms of science,) or for the purpose of attaining more enlarged and correct views of the subject of general grammar, or—what, in our view, is of still greater importance—for the sake of enabling this class of pupils to become acquainted, to at least some extent, with productions which embody perhaps the noblest and most beautiful forms of human thought.

Caii Julii Cæsar's Commentarii de Bello Gallico. Accedunt Notulæ Anglicæ atque Index Historicus et Geographicus. In usum Scholæ Bostoniensis. Curavit Fred. P. Leverett. Bostoniæ. Hilliard, Gray, Little, et Wilkins. 1829. 12mo. pp. 334.

This volume fills an important place among the valuable editions of preparatory classical authors, which, within a few years have issued from the Public Latin School of Boston. An accurate edition of Cæsar was much wanted; and it must be gratifying to instructors to receive one prepared with such ability and care.

Besides the superior accuracy of the text, the edition is recommended by the judicious omission of the supplementary books by

various writers, which are usually bound up along with those on the Gallic war, but which are seldom or never read, and which are certainly useless in a school copy of Cæsar. The 'Notes' are brief, but clear and instructive; and the 'geographical and historical index' is a valuable appendage to the work, containing much information not hitherto afforded in English editions of the author, and designating, in most instances, the quantities of the proper names. The neat and accurate style of the whole volume, and the engraved illustration of the bridge over the Rhine, form a striking contrast to the usual exterior of editions of this work.

Intellectual and Practical Grammar, in a series of Inductive Questions, connected with Exercises in Composition. By Roswell C. Smith, Author of *Mental and Practical Arithmetic*. Providence. 1829. 12mo. pp. 276.

Here is, at last, an attempt to present the subject of grammar in an intellectual form to the mind of the learner. We cannot speak particularly of the work, with the same confidence as to its accuracy in detail, as if we had had full opportunity to bring it to the test of experiment in the school room; but its plan is very nearly that which has been repeatedly suggested in our pages, as what was required to render the study of grammar a suitable discipline for the young mind. The author's method is to draw the pupil into conversation about words, and to put such questions to him as lead his mind to the same conclusions that are usually laid down in books on grammar, in the shape of definitions and rules. The work is, as it ought to be, of a simple and elementary character; and the illustrations are of that familiar kind which will render the book suitable for general use in schools.

One great advantage of the plan of this work is, that the pupil's mind is kept in continual activity by the variety in the form of the lessons, some of which consist in the correction of improprieties of speech, and others in regular but short and easy exercises to be written on paper or on the slate. The lessons in parsing are, with the exception of the concluding one on the Constitution of the United States, presented in gradual succession, and blended with the conversation and oral exercises on each class of words. To most teachers this work will probably be the more acceptable for the author's good sense in avoiding unnecessary peculiarities in his views of grammar; for, notwithstanding the originality of the plan, the results of the conversations and exercises will be found to correspond pretty nearly to the more formal and theoretic statements contained in Murray's Grammar; with this great advantage, that the pupil is enabled, by the arrangement of Mr Smith's work, not only to understand perfectly every step of his progress, but to obtain the results for himself, by the exertion of his own thoughts. To instructors generally, who

have not seen this work, we could not perhaps describe it more accurately, than by saying that it is nearly the same thing among books on grammar, that Colburn's works are among books on arithmetic. We hope the resemblance will hold in other respects also, and that this work on grammar will effect as great and as extensive a revolution in the mode of teaching in the branch of which it treats, as has been effected by the labors of Mr Colburn in his department.

A Book for Massachusetts Children, in familiar Letters from a Father. For the use of Families and Schools. Boston. Hilliard, Gray, Little, and Wilkins. 1829. 12mo. pp. 132.

This volume is intended to convey instruction in the form of practical and local information. It is a favorable specimen of the adaptation of useful knowledge to the minds of the young; it embraces a wide variety of particulars relating to geography, statistics, history, and zoology, as applicable to the State of Massachusetts; and it will be found an excellent introduction, we think, to the study of the geography and history of the United States.

The book consists of familiar letters, as mentioned in its title-page. The following are some of the subjects; The Commonwealth, its extent and boundaries; counties; seaports; commerce and navigation; fisheries; country towns; farming and other employments; capes; bays; islands; rivers; face of the country; mountains; soil; productions.

In some respects, however, the work needs revision. The map is too small; some portions of the political information seem unnecessary, and others improper for children. The moral instruction is too grave and formal, and sometimes associated with ideas of gloom and fear. Retrenchment and alteration, however, would certainly make this an invaluable book.

The questions appended to each letter form useful exercises; and if children were required to write the answers to most of them, in their own words, the whole subject would be more deeply impressed on the mind; and the application of grammar would be secured in conjunction with practice in penmanship and composition.

These exercises might be rendered still more interesting and useful, if thrown into the form of letters addressed to parents or friends, or, perhaps, even to the teacher.

L'Introducteur Français, or First Principles of the French Language; to which is prefixed a sketch of Pronunciation and Reading Exercises. The whole selected from the best French authorities. By C. A. Coulomb, Instructor of the French Language in the New-Haven Gymnasium, and Yale College. New-Haven. R. H. Maltby. 1829. 12mo. pp. 210.

What is required in books of this description is, in the first

place, perfect accuracy in statement, rather than comprehensive or philosophical views of language. In this respect, the book before us seems well adapted to facilitate the business of instruction. Nor has the author been less successful in giving to his work that simple and practical character indispensable in an elementary treatise; his whole plan and arrangement evince much skill in teaching, particularly with reference to the minds of the young.

The chief characteristics of this manual are the judicious selection of principles, and the appropriateness of the practical illustrations.

An Introduction to the French Language, with a Key to facilitate the literal and free Translation of the text, to point out the Grammatical Construction of the sentences, to show the Inversions of style, to supply Ellipses, and to explain idiomatical Expressions. By W. R. Johnson, Principal of the High School. Boston; Hilliard, Gray, Little, and Wilkins. Philadelphia; Towar and Hogan. 1829. 12mo. pp. 27 and 93.

The method of Du Marsais is here applied to the Greek language, and apparently with great success. The study of Greek, by the use of this volume, and of the elementary grammar of Professor Goodrich (mentioned in this number of the Journal,) will not only be rendered much easier and more practical than hitherto, but must prove a much better discipline of the mental powers of the learner; as the mode of application is rendered more natural and progressive, cultivates the intellect in conjunction with the memory, and incites the student to greater effort and closer investigation.

To enter into detail on the advantages of the method adopted by Mr Johnson, would be perhaps unnecessary, after the full expression of our opinions on this subject, which our readers will recollect as given in speaking of the excellent works of Mr Bolmar and of Mr Walker in the French and Latin languages, on the same plan. The method itself is briefly defined in the title page of the book as intended to facilitate *translation*, to point out *construction* and *inversion*, to supply *ellipsis*, and to explain *idiomatic* expressions. The aid in translation is so offered as not to authorise the pupil to dispense with his own diligence; and the instruction imparted on the other points mentioned, is full and satisfactory.

In the directions given for pronunciation, the author has adopted the standard of usage in modern Greek. To this some instructors may be disposed to object, as a source of irregularity and confusion; but an attentive investigation will, we believe, eventuate

in a conviction of the advantage of the existing standard of custom in Greece.

Sequel to Easy Lessons. A Selection of Reading Lessons for Common Schools, designed to be used after Easy Lessons in Reading, American Popular Lessons, Boston Reading Lessons, and other works of a similar rank. By the Author of the Literary and Scientific Class Book. Keene, N. H. 1829. 12mo. pp. 214.

In many schools a book of this description was wanted ; and this volume seems on the whole well adapted to its objects. It is characterized generally by judicious selection, both as to matter and style, and possesses more than an ordinary share of novelty. Most of the pieces contain examples of conduct which would seem likely to exert a natural and favorable influence on the minds of children.

The Improved Guide to English Spelling, in which, by the aid of a simple yet particular Classification, the use of all figures and marks to indicate the pronunciation is rendered unnecessary, and the progress of the pupil greatly aided by Association. By William B. Fowle, Teacher of the Monitorial School, Boston. Boston. Hilliard, Gray, Little, and Wilkins. 1829. 18mo. pp. 160.

This little volume contains the substance of the Rational Guide in an abridged form, and with other modifications, by which it is better adapted to the purposes of elementary instruction. The chief recommendations of this spelling book are its accuracy in orthoepy, the aid which it affords in difficult words, and, especially, the simplicity of the plan by which the sounds of the vowels are indicated. But to this, as to all spelling books, we must object that so many words are inserted which are useless in any book for children, and which they have no occasion to read or spell, in lessons adapted to their capacity. We have opened the book at random for an example of this defect, and the eighty-fourth page presents itself, in which the following are the first five words ; 'Intolerance, metropolis, monopolize, personify, preponderate.'

Sketch of a Plan for a System of National Education for Ireland ; including Hints for the Improvement of Education in Scotland. By R. J. Bryce, A. M. Principal of the Belfast Academy. London. 1828.

Our present limits will not admit of an adequate statement of the views embodied in this interesting pamphlet. At a future opportunity we shall endeavour to make our readers more fully acquainted with its contents. The following paragraph from the

Preface will, in the meantime, serve to give an idea of the main objects of the writer.

'In all schemes of popular education that have been recently presented to the British public, either on paper or in practice, there is *one radical error*, namely, that they are calculated only for the poor,—and *one fatal defect*, namely, the omission of all provision for the regular professional education of teachers. In the following pages an attempt is made to prove two propositions, on which the justice of the foregoing observation depends. 'These positions are, That a good system of education for the lower classes, distinct from the rest of the people, *cannot exist*, and That all endeavours to improve education, however zealous and generous they may be, *must utterly fail*, as to every purpose of real value, unless means be provided for enabling teachers to study education as a liberal art, founded upon the philosophy of the human mind. It is therefore proposed to erect teaching into a fourth learned profession, by establishing a professor of the art in every university,—by requiring from those who study under him a good previous education, and, in particular, an acquaintance with the science of mind,—and making a certificate of attendance on his instructions an indispensable qualification for every public charge connected with the education of youth,—from the presidencies of our richest and most illustrious colleges, to the masterships of our humblest village schools.'

The French Accidence, or Elements of French Grammar. By William B. Fowle, Instructor of the Monitorial School, Boston. Boston. Hilliard, Gray, Little, and Wilkins. 1828. 24mo. pp. 88.

This little manual is designed for very young learners, and seems to be carefully adapted to their use. It supplies a suitable book for a class of pupils which it has been difficult hitherto to teach, from the want of such a volume; and the accuracy and uncommon neatness of its execution cannot fail of rendering it acceptable as well as useful among juvenile students.

Exercises in Writing French, adapted to the French Accidence or Elements of French Grammar. By William B. Fowle, Instructor of the Monitorial School, Boston. Boston. Hilliard, Gray, Little, and Wilkins. 1829. 24mo. pp. 128.

This volume consists of exercises adapted to the above Accidence, and differing from those in common use, chiefly in their simplicity and brevity, and strict adaptation to their respective rules and principles. In all these particulars the book seems peculiarly well fitted for the purposes of practical instruction, and especially for young pupils.

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